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CALCUTTA UNIVERSITY CENTRAL LIBRARY

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Volume 10 January 1958 Number 1

THE TECHNICAL COLLEGE LIBRARY AS AN EDUCATIONAL INSTRUMENT

BY J. TOPPING, M.SC., PH.D., D.I.C., F.INST.P.

Principal, Brunel College of Technology

Conference on Library Services in Technical Colleges, London, 30th October 1957*

I THINK I should like to start this lecture by saying that the last two or three years have been for many of us in technical colleges the most exciting and perhaps the most exacting period in our experience. I have never before known a time when there was such a ferment of educational ideas going on in colleges; it is a time when the educational content of our schemes is being reconsidered, rethought and refashioned, and when teachers are thinking anew and fundamentally of what and how they should teach. This is so different from our earlier obsession with 'student-hours', a sort of numerical statistical blight which has afflicted us so much in the past.

This new attitude towards technical education and this emphasis on education rather than on mere training has developed not only in technical colleges but outside. It has developed in professional institutions and in many bodies and groups such as those which have supported this conference, in the National Council for Technical Awards and, not least important, in the Ministry of Education itself. I think the publication in recent months of three such Ministry circulars as those dealing with libraries in technical colleges, hostels and liberal studies respectively should make 1957 an outstanding year in the history of technical education. As you know, Circular 322 on libraries in technical colleges† was published in April this year. I think it may well mark the beginning of a new era in the development of these libraries. It expresses so well what a few colleges have been attempting, and is an excellent guide for others to follow. It has greatly encouraged those of us who have been trying to develop the library in our colleges as an effective educational instrument.

It was, of course, very long overdue, for it must be admitted readily but sadly that not only is the whole provision of libraries in technical colleges poor, but even where there are libraries they are not used in general as effectively as they should be, nor have we given enough thought to their function and place in colleges and how their full and imaginative use can affect teaching methods, timetables and syllabuses alike. We have possibly progressed since 1938 when the A.T.I., A.P.T.I. and the A.T.T.I. jointly published a report on technical college libraries,* but if you read that again you will still feel that we have not progressed very far. There is one extract I want to quote now because I think it still applies with all the force it had twenty years ago. After outlining the sort of things that should be done in colleges it says, 'We must in all fairness record our impression that the lack of library provision is, in many instances, due not so much to parsimoniousness on the part of the local education authority as to the fact that the importance of such provision has not been stressed by principals nor, in turn, by the members of the teaching staff'.

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* Papers given at the morning session are printed in *Aslib Proceedings*, vol. 9, no. 12.

† Ministry of Education. Circular 322 (12th April 1957). *Libraries in technical colleges.*

This being the case, perhaps it is not surprising that the great book on technical education, published a year or so ago, had no chapter on libraries, nor were libraries referred to in the book at all.

It must be said, on the other hand, that some college libraries are really excellent. There are just a few with a very good stock of books and periodicals and all the things we want like ample reading-room space and directed by fully qualified and enthusiastic librarians. But they are very few. Indeed, many of our colleges have no library at all. Even one college of advanced technology until a few months ago was in this position and had to depend on a local authority library placed conveniently near it. The proximity of this library was fortunate for the college but in a serious sense it was unfortunate because, much as I appreciate co-operation with the local library, I cannot believe that this should deprive a college of all the advantages of having a library of its own.

A report of the Library Association some time ago showed that 'of the 555 colleges in the United Kingdom dealing with technical education only 160 [less than one-third] have 300 or more books in a room called a library'. The coiner of the phrase 'in a room called a library' must have been a librarian! The number of such colleges may have increased recently but we cannot be satisfied until libraries are regarded as important and essential as laboratories and workshops, and until they are as closely integrated into our schemes and linked with the whole life and work of the college.

The White Paper on Technical Education stated, with the approval of all of us, that 'Every technical college should have a library with adequate supplies of technical books and journals. The library can play an important part in the general life of the college and especially in the development of its advanced work and in training students in methods of handling technical literature.'

Following this, Circular 322 explored in more detail the functions of a library and the role it should play in the college life. Indeed, it said many of the things I want to say today, but all I am going to do is to quote one paragraph. I am sure we have all read this circular but I think it important that we should realize what it has said. It has said some things which, if carried out, will transform the whole of our educational life. It says this: 'The functions of a college library are to provide books, periodicals and other material for use by students and staff, and to afford facilities for private study and research. Modern advances in science and technology, and the increasing volume of

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* *Libraries in technical institutions:* report by a joint committee of the Association of Technical Institutions, Association of Principals of Technical Institutions and Association of Teachers in Technical Institutions. Loughborough, A.T.I., 1938.

V.

material about them, make an up-to-date library service necessary for all colleges and vital to those engaged wholly or mainly on advanced work. A well-organized library can help students to widen their horizons beyond those reached in the classroom, to seek information for themselves and to profit by it when they have found it. Most students need some training in the use of a library, and particularly in the handling of bibliographical material. This training should be an essential part of their education. It will help them to take full advantage of the library's resources, and will show them how to continue their studies after they have finished their formal education.'

In some ways that paragraph summarizes all there is to be said on this subject, but let us think for a few moments of how libraries are used today and how they might be used in the future. I suppose the first way in which they are often used is merely as a workroom—the only place in a college where the students can do private study. It is the place where they go when they have a little free time between lectures or for part of their lunch time. I suppose there is something to be said for working in an atmosphere of books, but unless the books are used the collection hardly merits the name of library. It might be better if the walls were nicely decorated.

The second way in which libraries are used is that they are simply places where students go to borrow a book. Thirdly, libraries are places having collections of books where students are let loose unguided and undirected. 'There is the library—use it' would seem to summarize our attitude and, of course, many of us have learned much that way. I would not disparage browsing about a library. To me it has been an important part of my education, but is it the best we can do with our libraries?

The fourth way in which libraries are used is that they are simply anterooms to the research laboratories. This, I know, only applies to some of the more senior colleges where research is an important element in the college programme but when they are so used they are places full of recent technical journals and rows of bound volumes of institutional journals and scientific periodicals.

How often do we find all these functions happily and actively combined? Still more, how often do we find that the library is really used deliberately by the teachers as one of their regular teaching tools to help students to read, search, and discover? For are not these things among the main aims of our educational schemes? We often complain, justifiably I think, that students do not read. They find their lecture notes and an odd textbook more than enough and only a few of them can search out information for themselves and are thereby deprived of the real joy of discovery.

In stating our educational aims we often say that we wish to produce trained minds. We add, too, that although we are concerned to help students to acquire a sound knowledge of science and technology, we are even more concerned that they should appreciate the basic principles and be able to apply them to whatever new situation or new problem confronts them. This second purpose, as all teachers know, is a much more difficult one to achieve, perhaps because it is fundamentally easier to absorb knowledge than to think afresh and critically about a new or novel situation.

However that may be, I think we tend to make our educational task more difficult because we overload our students with facts; all too seldom do we place them in situations where they must think for themselves, analyse the situation and apply what knowledge they have or become aware that further knowledge is necessary. Perhaps never do we confront them with a situation where knowledge is not available, and that is the kind of situation that they will frequently have to face when they go to a technological job.

One danger, of course, which we must guard against is that students should not merely run to the library unthinkingly to ask for a book on this or that, a book that will give them a ready-made answer—a book which allows them to 'copy it out'. They must be guided beyond this and so helped to learn when and how the books in the library should be consulted. Sometimes I think we act as if students should be able to do this instinctively. I should like to suggest that the student has to be taught to do this as he has to be guided to do an engineering drawing or to carry out chemical techniques. We do not say to the student, 'There is the chemistry laboratory—use it'. Perhaps indeed we ought to use this method more often, but not before the student has really learned how to use a library, how to find the information he wants and how to apply it. It has been said that the critical selection and active pursuit of scientific literature is in itself a mental exercise inseparable from the highest quality of pure research. That is true, too, of the highest quality of education.

What, then, should we do? The first step, I think, is a very simple one and that is to ensure that students have time to use the library. This means some reform of our lecture and teaching programmes. It means cutting down our timetables so that the whole day is not completely filled with a succession of lectures and laboratory and workshop attendance. Something is at last being done with full-time courses; one of the most attractive features of the sandwich course is that students are being given time to do private study—not enough time in general but a certain amount of time—and this I regard as one of the greatest advances in technical education of our time. I should like to see similar experiments made with part-time day courses—how we think we can get the best out of students who are hard at it from 9 in the morning until 5.30, I do not know. With evening classes it is almost impossible to effect a change but I should like to see experiments tried.

Having given the student time to use the library the next thing is to stimulate him to use it. We must take every opportunity of devising schemes that will make it essential that the students use the library. We must give them assignments which will send them there. This will mean a change in teaching methods and in the kind of lecture we give and the homework we set, and it means that we shall have to be at least as up to date in the literature as we should like the students to be.

It is not my function to go into teaching details of this kind but if I were talking to teachers about this I would emphasize the need to use periodicals and current literature, not only to make available the best modern practice, but in order that students might appreciate the vast and unceasing flow of ideas that is transforming every subject today. It is important that quite early in their education they should realize that knowledge is not static or dead but living, growing and dynamic. They should realize that every subject is changing, some faster than others, and that what one has learned today will be replaced to some extent next year or even tomorrow. Therefore their own body of knowledge must grow. Their notebooks and textbooks will soon be in some degree out of date—and teachers need to realize this too! Students and teachers must be capable of acquiring knowledge and of continuing to learn.

You may think that this sounds trite and obvious, and the sort of thing we say to students when they are leaving the college. (What a pity we have not made it clear before.) But it is nevertheless important. Students all too rarely develop an understanding of the way in which knowledge grows. They do not seem to understand how individual contributions are made and how they are communicated to the world. They get no historical sense of the growth of knowledge and its development. That is something which comes with maturity, but it is too valuable to be wholly ignored at the student stage. This is being put right somewhat in the liberal studies which are an element in the programmes of many technical colleges, but it should not be neglected in the scientific and technological courses.

May I give one example? How many students of mechanics see the great epochs in that science through the memorable books of Galileo, Newton, Lagrange, Laplace, Maxwell, Einstein and Dirac? They should find these on the library shelves, and I wish that classification would allow them to be found in close proximity.

Once we have arranged for students to have time to be in the library, and we have got them there, it is important that they should know their way about. They can discover this by searching around, and one does not wish to minimize how excellent this is. But really students need what I like to call a formal introduction to the library. They need a talk from the librarian about the contents of the library, the arrangements, and about classification and similar matters. All this can be quite invaluable to a student at the beginning and I like to think that lecturers, early in the session, will bring each group of new students to the library to be introduced and to hear the librarian talk about his domain. Besides being good for the students it is often salutary for the staff. This introduction can avoid much waste of time and can help students to feel quickly at home in the library. They get to know the librarian early and are able freely to ask for advice and guidance.

Of course, in this case the librarian must be no mere purchaser and dispenser of books. He has an important contribution to make to the teaching in the college. Indeed, the librarian is a member of the teaching staff in a very special and important sense. In a few colleges he is so regarded. This raises questions of status and salary which I must not go into now. I will merely say that our libraries would be more effective educational instruments if our librarians were regarded and used as members of the teaching staff, and if the consequences of this were approached with imagination.

In all I have said I have been concerned with the student as a student, but I am also aware of what he is to become and the sort of world in which he is going to live. He is likely to live in a quickly changing world, with knowledge increasing at even a greater rate than today, bewildering and disturbing as it now is. How to keep pace with it and how to offset the dangers of high specialization are problems which are with us today, will remain and perhaps intensify.

For such a world the student's present fund of knowledge will hardly be adequate, even the best lecture notes will be of little avail. Unless the lecturer has succeeded in turning out men and women with certain qualities of mind he will not have done enough. He must not turn out people who are overwhelmed with a surfeit of knowledge, deadened and overloaded and unable to think critically about a new situation, or unaware in any particular situation of what they need to know and where to find it. He must turn out men and women who are able to keep abreast of developments over a restricted field—although we hope it will not be too restricted—and who, when sources of information are not available, are able to make an intelligent attempt to find an answer. I hope there will continue to be many lecturers who can produce such men and women. What we must be assured about is that they will use every educational instrument we have, and not least the library.

CO-OPERATION WITH LOCAL INDUSTRY

BY P. P. LOVE, B.SC., WH.SC., M.I.MECH.E.

Director of Research and Development, Glacier Metal Co. Ltd.

Conference on Library Services in Technical Colleges, London, 30th October 1957

THIS morning Mr. Broad gave a clear picture of the scope and organization of a technical library service, and Lord Verulam and Dr. Topping have shown the part played by a library in the field of education. We shall now examine the prospects of co-operation between technical colleges and local industry on library services.

It is a fairly simple matter to arrange for the contents of technical libraries of local firms to be made available to technical colleges. Schemes, such as the Co-operative Industrial and Commercial Reference and Information Services, are now in operation in various parts of the country. But whether these schemes are effective, in the full sense of the word, is another question. Manchester College of Technology is reported to have recorded over 500 visits for information during a recent year from members of industrial, Government, and research organizations. This is properly regarded as a useful contribution to the technical information service for industry, but let us for a moment look at this.

In Manchester there are over a hundred firms, each with its own technical problems. The average call upon the information service was less than five per annum from each firm. Another way to look at this is that from outside, the Manchester College library had fewer than three visits a day for specific information. Manchester is fairly well served with libraries, but even allowing for this there is evidence that the information service is used but to an almost trifling extent. What I am suggesting is that some of the existing arrangements operate at nowhere near their potential effectiveness.

In order to consider how an effective co-operation with industry can be achieved it may be useful to examine the objectives of a technical library from the industrial viewpoint, and to assess whether the overall results of a mutual organization are likely to justify the costs. Most firms run a technical library of some sort. Why do they do so? Who makes use of the library? What purpose does it fulfil?

These questions can largely be answered by surveying the contents of the library because these are set more by the demand than by any other factor. The small firm of, say, not more than 300 employees tends to orientate its library mainly around its product or process. One relatively small firm of vitreous enamellers, for example, has a surprisingly extensive library on that subject, and nothing else—not even a dictionary. As a rule, however, one finds a handbook on costing, one or other of the market survey volumes, and the like.

There is often a number of books on subjects seemingly quite foreign to the business of the company. These usually reflect some predilection of the firm's chief executive. In larger firms one finds the libraries to contain more on the techniques of operation than in small firms' libraries. There are usually books in these larger firms' libraries on management and sales as well as on the product and processes. Not infrequently there is a large section on the training of personnel, including young people.

It will be seen, therefore, that a firm's technical library reflects the products and processes of the firm, its techniques of administration and training, and often its policy in the field in which its chief executive is a leader in his own right. Dr. Topping showed clearly that the technical library in a college is an educational instrument providing, *inter alia,* background information to all the material explicitly treated by the college teaching staff. Correspondingly, the technical library in a firm is an executive instrument providing background information to all the executive instructions of a technical nature which pass from manager to subordinate.

The major common function of the college library and of the firm's library is the provision of information. We have now to ask, 'Is the information required by technical colleges appreciably co-extensive with that required by industry?' I think the answer must surely be Yes, if only because technical colleges undertake to fit their students to perform the offices of industry. To do this, the knowledge available to students in college is necessarily the knowledge required in industry.

Therefore, such integration of technical college libraries and the libraries of local industry as can be achieved by an integrated catalogue and index, and by a system of mutual exchange of information, is bound to help colleges to meet the needs of industry in their training courses. On the other hand, it will help industry to make more immediate and effective use of the latest general scientific developments.

But there is another problem which derives from the mass of so-called technical literature which floods our libraries and reading rooms. Of the upwards of 4,000 technical periodicals printed in English alone, how does one select what is worth reading? Of the thousand or so technical books published every year, how does one select the good from the poor? Surely the library must be more than a carefully catalogued and indexed collection of books and journals. Surely it must be a store of knowledge. I use the word knowledge in preference to the word information because so much information today is not knowledge but merely groups of words, said or written, which cannot be tested scientifically. Unfortunately, from this kind of information inferences are often made which lead to bad decisions. The information available in a technical library should be of such a status that it can be accepted, not as certainly true, but as the best scientific account at the time of its recording. That is knowledge. In so far as the contents of a technical library are not knowledge, that library is, to industry at any rate, ineffective, and indeed may be dangerous.

Great strides have been made in the techniques of disseminating information. Unfortunately, these permit the publication of good and bad information with equal ease. It is left to the reader to sort out the good from the bad. Today there are really so many poor periodicals, technical journals so-called, that many technical libraries become cluttered with rubbish which is not worth catalogue space, let alone shelf space. I think Mr. Broad referred to an experiment at Hillingdon where periodicals were circulated and some came back with the seals unbroken. I wonder whether the reason was due to people's lack of interest in reading technical literature or whether it was due to the fact that what was inside was not worth reading. I suspect a good deal of the latter.

As the library increases, the task of discrimination also increases. If the co-operation with local industry is going to be effective, not only must the information be catalogued and indexed but its status should be indicated so that the best information available on a particular subject can be selected without delay. In most inquiries the information is required quickly and there is not time for the inquirer to scan the literature. For this reason decisions have often to be made in default of existing knowledge.

The assessment of the status of each item on the shelves of a library is an awful task, not only because of the large number of periodicals but because it necessitates making judgments for other people. It is probably impracticable to go through the contents of any library of appreciable size and assess the status of each item, but we shall have to face this problem of assessing status sooner or later. How can it be approached? Here is a suggestion.

Broadly, there are two groups of people who consult libraries. There are those, already referred to, who are seeking knowledge in relation to a particular problem, and those who are scanning a particular subject for purposes of research or teaching. The first group want authoritative information which they can assume to be reliable, so that they can act upon it with a reasonable chance of arriving at correct decisions. Often a person may be consulting the literature as a novice in the particular subject, and it should be possible for him to get knowledge without having to use acute powers of discrimination.

The second group of people, those who are scanning a particular subject for purposes of research and teaching, are fairly expert in their subject and have powers of discrimination—or should have. They are sufficiently knowledgeable in their respective subjects to be able to discern the good, the indifferent and the bad. As a group they could be constituted as a library referee council. On a national basis a list of referees, forming this council, could be prepared and maintained by the learned societies, the Ministry of Education, the technical colleges and Aslib in their respective fields of knowledge. Most of the learned societies already have such a list for the refereeing of papers submitted for publication in their proceedings.

The combined list could then be made available to all the libraries and publishers. When a new book was to be published it could be submitted to the library referee council for review by two, or possibly three, referees, and given status ratings which would indicate in the case of technical books, for example, whether the book was objective, whether the information given was factual, whether workable abstractions were induced, the extent to which these were substantiated, and so on.

These status ratings could be coded and shown on the library index card so that a person could select right away the level of information he required. Periodicals could be given status ratings according to a declared editorial policy. If, for example, a technical journal only published articles which had gained certain minimum ratings by independent referees, then the journal itself would be given a corresponding status rating. In due course it would be possible for a person, be he in industry or in college, to go to a library and quickly acquire knowledge on any particular subject. Such an arrangement would not only save much time on the part of the inquirer but the library staff would much less frequently be called upon to look out some item only to have it returned a few moments later.

What are the difficulties? May I anticipate a few of the objections?

1. How can status ratings be standardized so that the assessment of one referee compares with that of another? The answer is that no absolute standards can be set, but I think it will be agreed that where a referee system is used, such as in the proceedings of learned societies, the standard of article published is relatively high.

2. Will status ratings remove from the reader the freedom to make his own judgments? Not at all. Additions to a library will not be conditional upon a publication getting status ratings. Also, a reader can quickly select, say, four or five variously rated articles on one subject and judge for himself if he so wishes. At present he has to read dozens, frequently hundreds, of articles before he can acquire the knowledge he seeks.

3. Will status ratings be difficult to code? I do not think so because machinery for dealing with documents and their coding is at an advanced state of development.

4. Will the research worker or student be discouraged from reading and making his own judgments? Perhaps he will, but I do not think he will be so discouraged as he is at present when he finds it necessary to read, say, two hundred articles on a subject, 80 per cent. of which hardly justifies the effort of lifting them from the shelves.

5. Could the contents of industrial firms' libraries be status rated? I believe, yes. In many firms additions to the library are made only on specific recommendation from one of the firm's technologists. This, in itself, is an elementary system of rating.

I could speak at length on this subject, but may I now summarize? Co-operation with local industry of library services in technical colleges is desirable to keep colleges in touch with industry and equally to keep industry in touch with scientific development. Co-operative arrangements have already been made without undue expense in various areas. The effectiveness of the arrangements is probably lacking because of the very large numbers of publications, many of which are of a low technical standard. Consequently, the time taken by an inquirer to get knowledge is lengthy and the result uncertain. This constitutes an urgent problem which could largely be overcome by giving status ratings to all additions to technical libraries.

The status ratings scheme should be on a national basis and should have the active guidance of the learned societies and other interested bodies. A library referee council might be constituted. Thus the standard of information services could be raised in quality and speed. Only then will real co-operation come into being, and only then will the full value of such co-operation be within sight.

DISCUSSION

MR. A. H. YATES (City of Bath Technical College) said that they had heard of the poor state of the libraries in many technical colleges and he was afraid that many of the people present who were not intimately connected with colleges might go away with the wrong impression as to the reason. Dr. Topping had said that it was suggested twenty years earlier that principals did not urge on governing bodies the needs of a library. He did not think that was true today. He felt sure that every one of the principals present had gone through the usual battle to try to get a reasonable grant for their libraries.

In his view there was only one major obstacle—finance. It appeared almost as if the speakers were in collusion in refraining from mentioning that point. Money was the sole reason why the colleges did not have the libraries everyone would like to see. A great welcome had been given to the Ministry circulars and he joined in that welcome because it was an assurance that the Ministry of Education would not hamper governing bodies in getting a good library. The Government, of course, did not provide libraries in technical colleges. They were built by the local education authority and if a local education authority chose not to have a library the Government could only stand by.

If a local education authority did decide to build a library the Government would make a 60 per cent. grant, but recently the Government had taken two steps which would hinder the provision of libraries. To his own authority the effect of the 7 per cent. bank rate had been the deferment of plans for new libraries, and the Government knew that was the case. Nothing could be done at local authority level on that issue.

Another factor recently introduced was the reorganization of local government finance under which it was proposed to change the grant-aid basis, and everyone concerned with education knew that it would make money harder to come by. Those who dealt with education knew that when money was short the first thing to be axed was the library.

He did not want anyone to go away with the idea that principals were not interested in libraries. Many of them were, but nothing could be done without an adequate amount of money. The Chairman had suggested that they should all go back and take action. He personally considered that anyone who had influence with the Government could have the greatest influence on the provision of libraries.

The CHAIRMAN said that money was a question of priorities—what could be afforded and what could not. As he saw it, those who were taking part in the conference must go back and persuade, in every way they could, those who were responsible for providing finance that libraries were a first priority. All that had been said at the conference would help to impress ever more upon people the importance of the provision of adequate finance for technical libraries. If help was required from industry then industry must be persuaded that the facilities afforded in the technical libraries were such as to help industry. It was his experience that when industry found that there were advantages to be obtained it would find the necessary finance. That was all the more reason for making the library services as efficient and effective as possible for industry because then more money would be forthcoming from that source.

ALDERMAN J. TWEDDLE (Sunderland Technical College) did not believe that the conference had paid a sufficient tribute to the industrialists of Sunderland. It would be recalled that the industrialists of Sunderland had introduced the sandwich course fifty years previously and the system was now being emphasized by the Government. Thirty years previously a great industrialist, Sir George Priestman, had built an excellent library at the Sunderland Technical College and it constituted a splendid example of close co-operation by the local authority with industry.

He had found that where there was that close liaison with industry, industry made its full contribution to the important necessities of technical education because it fully appreciated that it would benefit by that contribution—not only industry but the town and the nation at large. He wished to say that again they were attempting to call upon the industrialists of Sunderland to make a large contribution towards a further expansion which would cost about £1,500,000, and they were confident that industry and the big business houses of Sunderland would respond magnificently. He appealed to chairmen of boards of governors to work in close co-operation with industry because they would find that they got an excellent response.

MR. BALLAM (Poole College for Further Education) said that he did not wish to accuse the last speaker of starting a red herring but it must be remembered that there were many small technical colleges in areas where there was very little industry and where such industry as there was was disorganized. In such cases it was no use saying that industry would help. Such colleges had to rely on the local education authority. He knew of one authority which had cut out all school building programmes for the following year because the county treasurer said that he could not borrow the money. The only other way to arrange it was to take the money straight off the rates. In such a context it was complete nonsense to talk about industry or even to discuss libraries, because to the average person libraries were a frill to education and they were the very first things to go. Unless the Government were prepared to push the matter very vigorously the progress which could be made in the next few years would be extremely disappointing.

DR. C. WHITWORTH (Royal Technical College, Salford) said that there had been a good deal of talk about libraries not being adequately financed by the Local Education Authorities. The younger generation of principals wished to have libraries suitable to their colleges. This, however, had not always been the case. Some of the older generation of principals did not regard a library as an essential part of college provision. This led to certain embarrassing situations. In one case the Education Committee were prepared to finance library provision on a generous scale but, after agreeing to such, it was very disheartening to find that a principal did not wish to avail himself of this provision. It was, therefore, essential that principals should convince themselves of the necessity for a library. The local education authority could not be expected to support the provision of a library if the principal did not. After convincing himself that a library was essential, the next step was to convince his staff that such was necessary and to decide with them how best to use its facilities. It was no use principals saying that they did not want a library and then blame the local education authority for not making the necessary provision.

MR. F. C. JONES (North Lindsey Technical College) said that it seemed to him to be one thing to convince the local education authority of the need for a library—he personally was in the fortunate position of getting one—and quite another thing to convince them of the need for a librarian. The Ministry publication gave helpful advice but gave no indication of what was regarded as a small area college or at what stage it became a large area college such as to justify a librarian. The value of librarians had been emphasized during the course of the day and he felt sure that fact would be used to good effect by principals when they returned to their colleges.

He had tried to convince his local education authority of the need for at least a teacher-librarian but the situation, he was sorry to say, for the present was that he had to have office staff to look after the library. He would like to hear from fellow principals how they managed without a librarian.

MR. F. H. SMITH said that the last speaker had hit the nail on the head. The conference should not be so much concerned with the provision of libraries as with the provision of librarians. The librarian would get the library he deserved. He would call attention to one phrase in Circular 322 which he thought was the acme of intellectual snobbery. Referring to the librarian the Circular said, 'He should be acceptable as a colleague by members of the teaching staff. . .'. That summed up the whole atmosphere of librarians through the ages and unless one could afford a four-figure librarian, who would demand a library worthy of him, one might as well give up the whole idea.

MR. E. THIRKETTLE (London School of Printing and Graphic Arts) said that it had become almost monotonous to hear one speaker after another point out that the main difficulty in the way of establishing libraries was that of finance. He believed, however, that all the principals present would endorse that fully. But he thought principals would equally endorse the statement made by Dr. Topping that the librarian was 'a member of the teaching staff in a very special way'. Until that was recognized, not only by the principals but by the local education authorities, the libraries could not do the job which the Ministry circular clearly indicated they should do.

During the morning Mr. Broad had referred to courses conducted by librarians with the object of helping the students and the staff to understand the functions of a library. Mr. Thirkettle believed that many of those present would like to hear from Dr. Topping and other speakers to what extent this was established practice and to what extent it was regarded as desirable and practicable for librarians to give collective instruction to students. His own feeling was that the librarian, in so far as he had the time to do so, could give most valuable help to the work of the college. If it were the general feeling of the conference that librarians should be doing that work, the local education authorities might be more ready to adopt the view that the college should not only have a library and a qualified librarian but that the librarian should have time to give instruction in running the library.

They had heard from one principal from Manchester how he had conducted an experiment in his college and had found that many of the lecturers themselves did not understand the simple 'mechanics' of using a library and were glad of instruction. The instruction which the librarian could give in his own sphere was just as specialized as that which lecturers gave in their departments. Lord Verulam's address clearly showed that technical education without the enlightened use of books might become mere technical training. But before students—or teachers—could make the best use of a library, it was necessary for them to know 'how the machine worked' and in this respect the librarian was a key member of the college academic team.

Dr. J. Topping said he thought it was known how many librarians were engaged as members of the teaching staff. He had had the figure quoted to him by Dr. Pickard only a few days ago. He believed that librarians who were paid on a different scale of salary were doing the kind of thing referred to by the speaker, but how many he did not know.

Alderman J. W. Brown said that such a short time had passed since the Ministry's circular had appeared that what authorities were doing was in the nature of an experiment but his authority had appointed tutor librarians who were recognized as members of the staff. In big colleges they appointed a chief librarian who did the same work, and there were assistant librarians who were concerned only with the work in the library. That had been welcomed by principals and by the rest of the staff, and he thought it was a beginning which should develop.

Mr. R. D. Rates (Lewisham Central Library) asked what effect the setting up of the Roberts Committee on Public Libraries would have in relation to the spread of technical college libraries, particularly in view of the experience gained from two comprehensive schemes already running, namely, the Hertfordshire scheme being administered through the county library service, and the West London information service (C.I.C.R.I.S.) in which all the information services of technical colleges, public libraries, trade associations, firms and so on co-operated voluntarily for their mutual advantage. Could Dr. Topping give any idea of the part which technical college libraries might be expected to play in any scheme which the Roberts Committee might have.

Dr. J. Topping replied that he did not know. He could only hope that technical colleges would play a full part in the regional scheme referred to.

Mr. J. Fry (Welsh College of Advanced Technology), referring to the question of instructing the student in the use of the college library, said that the answer was that where a college had a qualified librarian this was usually being done. It was done in Cardiff, for example, and most other colleges which had qualified librarians gave instruction in the use of the library. It was a question of whether or not there was a person on the college staff capable of doing it.

Dr. J. Topping said that it was a job which the staff could do as well. It should not all all on the librarian.

Mr. Foden (Basingstoke Technical College) asked how the speakers suggested that the problem of departmental libraries should be solved. Technical colleges often had more books in use than the principals were aware of, and many of them rested on the shelves of members of the staff at home. How was that problem to be solved?

Dr. J. Topping replied that he was not keen on departmental libraries. The reason why he did not like them was that there was a tendency to misuse them in the way the speaker had indicated and also, however good the provision of libraries, they were not likely to have enough librarians to service all the departmental libraries. The first necessity was for a good library for the whole college, and if after that it was possible to run departmental libraries successfully, well and good.

Dr. H. Lowery (South-west Essex Technical College) said that when he had first seen the Ministry's circular he had wondered what they had come to. He had wondered how the suggestion could ever be made that a technical college should not have a library. Personally he would have thought that it was the first necessity. His own college had been going for about eighteen years and the library contained over 30,000 volumes, and thirty-two complete runs of technical journals, including the transactions of the Royal Society, and many fine textbooks. They had three full-time librarians and he had not had the slightest difficulty in persuading the governors and the Essex Education Committee to support the library. The case for a library was so strong that he would not have thought there could be any doubt about the possibility of developing a library in a technical college.

With such a fine array of technical journals it was obvious that local industry and even wider industry could make use of their periodicals, and to that end they operated through the National Central Library. He believed that last year they had lent more books to the Central Library and other co-operating libraries than they had borrowed in return. The National Central Library had been mentioned; it should be noted that there is a scheme whereby all the public libraries could be associated with it, so that it was possible at the present moment for a really serious student anywhere to obtain a book, or a copy of a page of a book, from any student library in the world. He did not think that the existing amenities were sufficiently realized. His own college actually obtained books from libraries in America and elsewhere in the world. Similarly, research associations and universities had borrowed books from their library, and members of local firms came and made use of their books.

They were also associated with another scheme whereby their library was a repository for county records, and they provided reference not only for technical students but library students and others. Their grant was £1500 a year. If a library like his own could do that he believed that such things were possible elsewhere under the present system. If there was any difficulty about it people should appeal to the chief educational officers and get them interested in the college library because everything mentioned in the Circular could be done under existing arrangements.

MR. W. A. J. CHAPMAN (Hatfield Technical College) said that he was rather surprised that Dr. Topping should feel that the technical library service, if established, should remain with the central library authorities rather than the technical college. He thought that there would probably be another circular shortly on external public relations and he would have thought the library service to be a very important link in the chain of public relations however good the present service might appear to be.

The second point he wished to make was rather interesting in view of what had been said on liberal education. In September his college had appointed a tutor-librarian, and it had been his hope that this individual would become one of the team of social studies teachers. But the head of that department took the view that this was not a liberal study but a technical study and was reluctant to have him. It had been arranged for the man in question to go to another department, but eventually he had become a member of the social studies staff, working with this team. This incident was mentioned as reflecting the attitude of the heads and teachers of colleges.

Another difficulty which would have to be faced ultimately was that tutor-librarians are being appointed on the Burnham scale. He considered that the chief technical librarian was doing work quite as good as that of a head of department or highly placed Burnham-scale teacher and therefore his salary should be comparable.

SOURCES OF GENERAL INFORMATION FOR THE SPECIAL LIBRARIAN

BY C. A. THURLEY, A.L.A.

Reference Librarian, Cambridge City Libraries

NO matter how well-defined and specialized may be the field of a particular library it is only natural for the users of the library to ask for information on a variety of topics far removed from the main subject interest. It is therefore necessary for a part of the book fund to be set aside for these general purchases; *Whitaker's Almanack* is an obvious example. As this can be a costly business it may be of interest for special librarians to hear of some useful publications which come from highly reputable sources and yet are available free or at little cost. Addresses to which requests for these publications should be sent are given in an appendix.

The Royal Empire Society[1] issues a series of duplicated foolscap reports on the Colonies. Each colony is described, with advice on what to wear, the food to eat, cost of living, income tax, educational facilities and similar topics of practical importance to the intending visitor.

The Board of Trade publishes a series of pamphlets under the title *Hints to business men.*[2] Most of the countries of the world are included and the aim is to give the traveller essential background information about the country together with advice on hotels, police regulations, hours of business, public holidays, terms of trade and so on. These booklets, like the Royal Empire Society's series, are frequently revised.

Bank and public holidays throughout the world[3] is an annual publication containing a list of countries, colonies and states arranged alphabetically with lists of the principal holidays in each.

The Swiss Bank Corporation's *British exports and exchange restrictions abroad*[4] reached its eleventh edition in April 1957. Arrangement is alphabetical by country. Tables of countries forming the various monetary areas are also included.

The District Bank issues a *Digest of the U.K. exchange regulations*,[5] recently available in a twelfth edition.

Now that traffic congestion is with us again *Basic road statistics*,[6] published annually, will provide much background information on this topic. A list of organizations belonging to the British Road Federation is another feature.

British Railways publish *Agricultural and horse shows*[7] each year. The main part of the book consists of a list of the shows arranged chronologically, with details of site, closing dates for entries and the secretary's name and address. An alphabetical index and an account of British Railways' facilities are also included.

For inquiries on the dates of horse races, festivals, pageants, test matches and similar events, the best source is the monthly *Coming events in Britain.*[8] Apart from this specific use it also provides a well-illustrated collection of articles on British places, customs and products.

Also worth acquiring are publications on South America,[9] Australia,[10] New Zealand,[11] Northern Ireland,[12] Canada,[13] and the United States of America.[14]

These are some of the more general sources of information which have proved their worth in the Cambridge Reference Library. Free technical items have been excluded because Aslib members will know of them.

APPENDIX

(Full addresses are given so that no reference need be made to other sources. All except item 12 are in London.)

1. The Information Bureau, Royal Empire Society, 18 Northumberland Avenue, W.C.2.
2. Directories and Notices Section, Board of Trade, Room 8147, Horse Guards Avenue, S.W.1.
3. Guaranty Trust Company of New York, 32 Lombard Street, E.C.3.
4. Swiss Bank Corporation, 99 Gresham Street, E.C.2.
5. District Bank Ltd., Foreign Department, 76 Cornhill, E.C.3.
6. British Road Federation, 26 Manchester Square, W.1.
7. Chief Commercial Manager, L.M.R. Headquarters, Euston, N.W.1.
8. British Travel and Holidays Association, 64–65 St. James's Street, S.W.1. 18*s.* *a year including postage.*
9. Hispanic and Luso-Brazilian Councils, 2 Belgrave Square, S.W.1.
10. *Monthly summary of Australian conditions,* National Bank of Australasia, 7 Lothbury, E.C.2.
11. *Forefront,* High Commissioner for New Zealand, 415 Strand, W.C.2.
12. *Ulster Commentary,* Government Information Office, Stormont Castle, Belfast, Northern Ireland.
13. *Commercial letter,* The Canadian Bank of Commerce, 2 Lombard Street, E.C.3.
14. United States Information Service, 41 Grosvenor Square, W.1

SELECTIONS FROM THE RECENT LITERATURE

Books and Pamphlets

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ANTHONY, L. J.
Sources of information in atomic energy. Harwell, Atomic Energy Research Establishment, 1957. 26 pp. mimeographed (A.E.R.E. Lib/L1, 2nd ed.).

*ASSOCIATION OF ASSISTANT LIBRARIANS. Greater London Division
Reference books and bibliographies: a union list, [by] L. M. Payne [and] Joan M. Harries. London, the Association, 1957. xii, 92 pp. mimeographed. 6*s.* 6*d.*

*BAER, Eleanora A.
Titles in series: a handbook for librarians and students. Vol. 2: Books published prior to January 1957. New York, Scarecrow; [London, Bailey Bros], 1957. xxx, 1167 pp. $6.50; 61*s.*

BEERS, Henry Putney
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*BRITISH TRAVEL AND HOLIDAYS ASSOCIATION
Organisations in Britain holding regular conferences. London, the Association, 1957. 59 pp. 15*s.*

COMMITTEE OF UNIVERSITY INDUSTRIAL RELATIONS LIBRARIANS. Sub-committee on Subject Headings
A standard list of subject headings in industrial relations. Supplements 1–4. Princeton, N.J., Princeton University Industrial Relations Section, 1957. [31] pp. mimeographed. 50*c.*

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Federation of British Industries
Report of the second national conference between industry and the technical colleges, 15 May 1957. London, the Federation, 1957. vi, 71 pp. table. 5*s.*

*Great Britain. Her Majesty's Stationery Office
International organisations publications, 1956; supplement to the Stationery Office catalogue. London, H.M.S.O., 1957. pp. 213–47, xv. 6*d.*

*Great Britain. Patent Office
Periodical publications in the Patent Office Library: list of current titles. London, H.M.S.O., 1957. v, 187 pp. 7*s.* 6*d.*

*Hewitt, A. R.
Guide to resources for Commonwealth studies in London, Oxford and Cambridge, with bibliographical and other information. London, Athlone Press for the Institute of Commonwealth Studies, 1957. viii, 219 pp. 21*s.*

International Geographical Union. Commission on the Classification of Books and Maps in Libraries.
U.D.C. 91—Geography: proposal for a revision of the group U.D.C. 91 Geography; comp. by E. Meynen. Remagen, the Union, 1956. 91 pp. mimeographed. [Text in English, French and German. Obtainable from Bundesanstalt für Landeskunde, Remagen/Rhein.]

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How to use a medical library; a guide for practitioners, research workers and students. 3rd ed. London, Heinemann, 1957. vii, 53 pp. 7*s.* 6*d.*

Munich. Universitätsbibliothek
Der systematische Katalog der Universitätsbibliothek München, von Ladislaus Buzas. 2 Band: Systematik XI–XXV. München, die Bibliothek, 1957. 449 pp. mimeographed.

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Who cares? about human relations: a selective and critical bibliography deeply concerned with the human relations of family, community, ethnic and racial groups, religion, education, business and industry. New York, Scarecrow Press; [London, Bailey Bros.] 1957. vii, 9–141 pp. $3; 27*s.*

*Perugia. University
Catalogo delle pubblicazioni periodiche italiane e straniere esistenti presso gli istituti universitari di Perugia; presentazione di Aldo Spirito. Perugia, Università degli Studi, 1956. 139 pp. 3,000 *lire.*

*Royal Agricultural Society of England
Survey of agricultural libraries in England and Scotland. London, the Society, 1957. iii, 75 pp. mimeographed. 12*s.* 6*d.*

*Royal Anthropological Institute of Great Britain and Ireland
Survey of anthropological journals and monograph series in libraries in the United Kingdom. London, the Institute, [1957]. 17 pp.

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A modern Hungarian-English dictionary. Cambridge, Heffer, 1957. xvi, 131 pp. 8*s.* 6*d.*

Stewart, Rosemary
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Perspective: aspects of data-handling mechanization deserving research. [Washington], American Chemical Society, 1957. 8 pp. mimeographed.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB INFORMATION

ASLIB CALENDAR 1958

JANUARY

TUESDAY 28th. Chemical Group visit. See paragraph below.

WEDNESDAY 29th. Economics Group meeting. Ministry of Agriculture Library, 6 p.m.

FEBRUARY

FRIDAY 7th. Scottish Branch conference. See paragraph below.

MONDAY 10th–TUESDAY 11th. Course on the organization of Science and Technology. See paragraph below.

WEDNESDAY 12th. Economics Group meeting. British Institute of Management, time to be announced.

WEDNESDAY 19th. Economics Group meeting. Bank of London and South America, 5.30 p.m.

WEDNESDAY 26th. Economics Group meeting. British Aluminium Co., Intelligence Department, 5.45 p.m.

MARCH

WEDNESDAY 5th. Conference on Scientific and Technical Translation. See paragraph below.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference. Nottingham University.

President honoured

Members will be delighted at the inclusion of Mr. F. C. Francis, President of Aslib, as a C.B. in the New Year's Honours List. The award is fitting recognition of the many years of service which Mr. Francis has given not only to the British Museum but the entire library movement, international as well as national.

Librarianship is, perhaps, not as strongly represented in the List as one might wish, though it is good to see that Alderman Miss Mary Kingsmill Jones, who has done much for library services in Manchester, has been made a D.B.E., and Mr. J. C. W. Home, of the Department of Printed Books at the British Museum, has received the O.B.E. Mr. S. C. Roberts, who becomes a Knight Bachelor, is, as members know, a Past-President of the Library Association and also Chairman of the Government committee now considering Public Library Services in England and Wales.

Two awards at the D.S.I.R. will give pleasure to Aslib members. Dr. H. W. Melville who recently succeeded Sir Ben Lockspeiser as Secretary of the Department becomes a K.C.B., and Mr. S. H. Smith of the finance and accounts department receives the O.B.E.

Conference on Scientific and Technical Translation

This conference will be held on Wednesday 5th March at The Connaught Rooms, Great Queen Street, London, W.C.2. It is intended to survey the position of scientific and technical translation from various aspects, bearing in mind that many organizations and individuals are occupied with this work at international, national, industrial, commercial, and personal levels and that there appears to be a great need for more interchange of information between them.

The speakers will be Dr. A. L. Mackay, Lecturer in Physics, Birkbeck College, on the organization and availability of technical translation, Mr. Felix Liebesny, Senior Technical Information Officer, Patent Department, Mond Nickel Co. Ltd., on the economics of translation; and Mr. A. G. Readett, Head of Translating Department, National Coal Board, on training and education. Dr. J. E. Holmstrom, Head of the Department of Natural Sciences, Unesco, and Mr. E. B. Uvarov have agreed to preside at the morning and afternoon sessions respectively.

It is hoped that a result of the conference may be the elimination of much wasteful duplication of effort and closer co-operation between all those concerned with translation and interpretation and with the training of staff for this work.

The fee for the conference, including luncheon, is 30*s*. Application forms may be obtained from the Director, Aslib, 4 Palace Gate, London, W.8.

Scottish Branch Conference

The Annual General Meeting of the Branch will be held on Friday 7th February in the Scottish Central Library, Edinburgh. It will be followed by a one-day conference open to non-members which is scheduled to commence at 10.30 a.m. The first speaker will be Miss Margaret Haferd, Librarian of the United States Information Service Library, on the function of the Service in the United Kingdom. She will be followed by Dr. Malloch, Chief Scientific Liaison Officer of the National Research Council of Canada whose subject is 'Scientific information in the modern world'. Speakers in the afternoon will be Miss Visser of the Netherlands and Miss Sømme of Norway, who have experience respectively of special library and public library work in their own countries and are now on the staff of the Edinburgh Public Libraries. The last speaker will be Miss Enid de Silva who comes from Ceylon and Kenya and is working in Aberdeen.

Tea will be served in the Scottish Central Library and there will be time afterwards for informal meetings and talk.

Engineering Group—Electronics Section

It has been suggested that, subject to the approval of the Council, an Electronics Section of the Engineering Group be formed. The idea has already been discussed at an exploratory meeting and it was felt that the formation of such a Section would be more successful than that of a separate Electronics Group, since the subject is increasingly linked with all types of engineering. A meeting for all those interested in the proposed Section will be held at

2.30 p.m. on Wednesday 5th February in Room 15A, Central Electricity Authority, Bankside House, Sumner Street, London, S.E.1. The formation of an Electronics Section will depend on the demand for it, and all interested members are asked to make every effort to attend this meeting or to write to Aslib stating their views. Those who intend to be present are asked to inform the Group Secretary, Mrs. J. D. Hooley, c/o *Engineering*, 35–36 Bedford Street, London, W.C.2, not later than 31st January.

Chemical Group

On Tuesday 28th January a party limited to seventeen junior members of library staffs will visit the Library of the British Non-Ferrous Metals Research Association, by courtesy of Mr. B. Fullman, Chief Information Officer. Other visits are being arranged and will be announced later.

Course on the Organization of Science and Technology

This course, of which a preliminary notice appeared in the November 1957 issue, has now been arranged to take place on Monday and Tuesday 10th and 11th February at the College of Preceptors, 2 Bloomsbury Square, London, W.C.1. Mr. C. A. Ronan of the Secretariat, The Royal Society, will speak on the evolution and inter-relationships of the sciences and technologies; Mr. Ritchie Calder, C.B.E., on the nature and function of science, scientific and technical research and its impact on production and the life and welfare of the community; Mrs. M. E. Mackiewicz, Information Officer, Aslib, on the role of organizations in science and technology; Mr. Leonard Hill, Chairman, Leonard Hill Limited, on publication methods and types of publication in science and technology; and Mr. B. C. Vickery, Librarian, Akers Research Laboratories, Imperial Chemical Industries Limited, on mental habits and literature-using habits of scientists and technologists.

A notice of the course was distributed in December and those wishing to join who have not already applied should do so at once to Aslib, 4 Palace Gate, London, W.8. The fee for the course is 8 guineas.

Aslib Year Book 1957–1958

After delays caused mainly by the influenza epidemic among the printers' staff, the second *Aslib Year Book* appeared on 6th December and has been distributed to all those who had placed standing or advance orders. It contains names of the officers of Aslib and members of Council, a full alphabetical list of Aslib members and a classified list of corporate members. Also included are details of Aslib publications, a select reading list for special librarians and information officers, and an index to suppliers of library equipment and services. *Aslib Year Book 1957–1958* is available from Aslib, 4 Palace Gate, London, W.8, price 10*s.* to members, 12*s.* 6*d.* to non-members.

Proceedings of the International Study Conference on Classification for Information Retrieval

The Conference was held at Beatrice Webb House, Dorking, in May 1957, and was organized for the F.I.D. by Aslib, as British National member, with

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the collaboration of the Classification Research Group and the University of London School of Librarianship and Archives. It brought together for the first time, in ideal surroundings for fruitful work, representatives of nearly all the main groups of workers on subject classification, and will almost certainly prove an important point in the history of the subject. There was surprisingly wide agreement on principles and on the direction of future work.

The conference papers and proceedings will be an essential document to any student of classification, while the theme papers particularly will be an excellent introduction for the many people who are now realizing what a powerful tool modern classification can be in reducing to order the mass of specialized literature.

The *Proceedings of the International Study Conference on Classification for Information Retrieval* is published by Aslib, 4 Palace Gate, London, W.8, price 25*s.* to members, 30*s.* to non-members. Residents in the United States and Canada should order direct from Pergamon Press, 122 East 55th Street, New York 22, N.Y., price $4.50 to members of Aslib, $5.50 to non-members.

Index Bibliographicus, 4th Edition

Aslib has been responsible for the collection of entries for vol. 1 (science and technology) of the new edition of *Index Bibliographicus* which will appear in 1958. Entries have been sent in during the past three years by almost all publishing countries, and in order to bring the material up to date it has been submitted to specialist members of Aslib and to other librarians. Aslib wishes to thank all those who have given valuable time to help with this revision.

Mr. L. G. Kenrick

Members will be sorry to learn of the death, on 5th December 1957, of Mr. L. G. Kenrick, who was a member of Council from 1954 to 1956 and served on the Conference and Meetings Committee during the past two years. We offer our sincere sympathy to Mrs. Kenrick.

Commonwealth Research Librarianship

A Fellowship known as the Commonwealth Research Librarianship is again being offered at Lehigh University in Bethlehem, Pennsylvania, U.S.A., and applications are invited from suitably qualified librarians in the United Kingdom. Applicants must be between 25 and 35 years of age, hold a university degree and have either a library qualification or library experience. The Fellowship is available for one academic year, but may be renewed for a second year. It carries a stipend, to be paid monthly, at the rate of $4,000 a year, but the cost of travel to and from Bethlehem must be paid by the Fellowship holder. The successful candidate will be required to take up residence at Lehigh University during the first week of September 1958. Applications must reach the Director of Aslib, who will be glad to supply further information, by 7th February 1958.

University of Chicago Graduate Library School

'Iron Curtains and Scholarship: the exchange of knowledge in a divided world' is the title of the twenty-third annual conference of the Library School to be held from 7th to 9th July 1958. Subjects for consideration include the barriers to cultural exchange on both sides of the iron curtain, the volume and range of publishing on the other side, American library holdings of iron curtain publications, communist scientific literature, and the reciprocal effects of a freer exchange of knowledge. For further details write to Lester Asheim, Dean, Graduate Library School, University of Chicago, Chicago 37, Illinois.

F.I.D. *Review of Documentation*

The International Federation for Documentation has announced that the forwarding expenses for the *Review of Documentation* for 1958 are to be 2.50 Dutch guilders. This is an increase of 50 cents on the postal charges announced in the leaflet distributed by Aslib last month and in the advertisement in the December 1957 issue of *Aslib Proceedings*.

National Central Library and Regional Library Systems

It is announced from the National Central Library that operation of the arrangement under which the Library would cease to handle requests from the Regional Library Systems for British books published after 1st January 1958 will be postponed until 1st January 1959.

Council of Library Resources

The Council of Library Resources Inc. which was set up with money from the Ford Foundation to encourage research into library science has issued its first annual report for the period ending 30th June 1957. It contains an interesting discussion on the notes of library research broken down into headings: basic research, technological development, and methodological development and co-ordination of effort. Grants already awarded include $1400 to the American Library Association towards international standardization of cataloguing, $100,000 to the Rutgers University for investigation of targets for research in library work, $49,500 to the Virginia State Library for a study of the deterioration of book stock, and $41,500 to the University of Virginia for a study of closed circuit of T.V. in a decentralized library situation.

NEW MEMBERS

Corporate

Allam, Philip S.	
Atomic Power Constructions Ltd.	M. B. Guest
Brighton Technical College	Miss E. W. Garratt
Britalian Steel Construction Co.	L. J. Blumenthal
Electric Construction Co. Ltd.	H. E. Laflin
Ghana. Department of Agriculture	
Heythrop College Library	Rev. F. Courtney

Institute of Nuclear Physics	Mrs. P. Hosain
Israel Embassy	Miss M. Oren
John Crerar Library	H. H. Henkle
King's Lynn Technical College	R. C. Fox
London & Scandinavian Metallurgical Co. Ltd.	Dr. W. Sachs
London University, Institute of Education	D. J. Foskett
M.W.M. (London) Limited	R. W. Fry
Merz & McLellan	M. L. Coram
National Research Development Corporation	S. F. Wilkinson
North-West Kent College of Technology	L. E. Milton
Royal Dental Hospital of London	H. Pickard
Shamrock Fertilizers Ltd.	H. Van Den Bergh
Slough College of Further Education	R. Edgar
Twyford Mill Ltd.	J. M. Graham
United Kingdom Atomic Energy Authority, Culcheth	M. O. Dobson
Wall Paper Manufacturers Ltd.	W. Kearly
Wilkinson Sword Ltd.	R. S. Hanson

Individual

Aitken, Miss J. W.
Bijur, G.
McGinnis, Miss J. A.
Smith, Professor W. E.
Totman, Miss P. I.

MEMBERS' ADVERTISEMENTS

MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared. American and English only. Work called for and delivered within reasonable distance. B. M. Collins, 77 Walm Lane, Willesden Green, London, N.W.2.

TRANSLATIONS, Technical and Commercial, from German and French, promptly executed by experienced man (on Aslib register of specialist translators). H. B. Andrews, F.R.S.A., F.I.L., 43 Wansunt Road, Bexley, Kent. Bexleyheath 3071.

TRANSLATIONS, TECHNICAL, SCIENTIFIC. All languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.Sc. (Engin.), 140 Wightman Road, London, N.8. Tel. Fit. 0835.

Situations vacant

JUNIOR ASSISTANT not over 20 (female) required for small technical library in Raynes Park area. Previous experience not necessary but some typing ability essential. Five-day week. Staff canteen. Salary according to age and qualifications. Reply to Central Rediffusion Services Ltd., 187 Coombe Lane, Kingston-on-Thames, Surrey, or telephone Malden 6641.

SENIOR LIBRARY ASSISTANT, male or female, aged 23–28 for duties in a works technical library. Duties will include the perusal of technical journals and the dissemination of scientific information, as well as the answering of inquiries and some routine library work. The applicant should possess a sound scientific background preferably up to tutor B.Sc. standard. Salary £500–£650 dependent on qualifications and experience. Housing available if from outside area. Apply Personnel Manager, Edwards High Vacuum Limited, Manor Royal, Crawley, Sussex.

For Sale

Nouveau Traité de Chimie Minérale by P. Pascal, Vol. 1, 1102 pp. Air, water, hydrogen, deuterium, tritium, helium and inert gases. Masson et Cie, Paris 1956, 8400 f. Bound new condition, unmarked, price 45*s*. Technical Services Bureau, 17 Clifford Road, New Barnet.

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 10 **February 1958** **Number 2**

SOME LEGAL ASPECTS OF INFORMATION WORK

BY V. BISKE, B.SC., LL.M., F.R.I.C., F.INST.PET.

Lobitos Oilfields, Ltd.

Aslib Northern Branch Conference, Chester, 25th October 1957

INFORMATION OFFICERS AS SERVANTS

WHETHER we admit it or not, we are all essentially selfish and like to know the answer to the question 'Where do I stand?' Hence it is proposed, as the first of the few topics selected for discussion in this paper, to deal with the position of the information officer himself.*

Like the vast majority of gainfully occupied persons in this country, the information officer or librarian is usually a servant. This term may perhaps have a slightly old-fashioned ring, but the law of master and servant is a recognized branch of the law and it is perhaps useful to keep to a phraseology which is well known. It is important to remember that the general manager of a company is, like the office boy, a servant of that company. Their conditions of service will, of course, be different, but they are both servants. It is necessary to distinguish between a servant and what is known as an independent contractor. The distinction is important in many fields, among which is that of copyright, to be considered later. A servant is given orders by his master, who not only tells him what to do but can, in theory at least, exercise control over the way in which the job is done. 'In theory at least,' because under conditions of modern industry any such detailed control is more illusory than real. For example, many works today employ a whole-time medical officer. The works manager can obviously tell him when to start and finish work and govern his actions in matters of that type, but he is not in a position to say what treatment shall or shall not be given in any particular case. In cases such as these the difference between a servant and independent contractor can sometimes be difficult to lay down.

The vital point of distinction is that a servant is employed under contract of service, whilst the independent contractor is employed under contract for services.

A quotation from a recent case illustrates this difference very clearly: 'A ship's master, a chauffeur and a reporter on the staff of a newspaper are all employed under contract of service, but a ship's pilot, a taxi-man and a newspaper contributor are employed under contract for services'.[1]

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* In this paper the ruling given in s. 1 (1) (*a*) of the Interpretation Act 1889, which states that 'unless the contrary intention appears words importing the masculine gender shall include females' will be adopted.

It is often said that a master is responsible for the wrongful acts of his servant. This, of course, is a correct statement of the law, but it is not the whole story. It has long been recognized that if a servant commits a wrongful act he is personally responsible for the consequences of such torts and furthermore, if such results in the master having to pay compensation to a third party, then the master has the right to call upon the servant to reimburse him for any expense he has had to undergo.

In the early development of our industrial society such personal responsibility of the servant, whilst existing in law, was seldom of practical significance, since the majority of servants would be people of little financial status, against whom judgment would be of little value. Today, however, the position is changing since there are quite highly paid individuals who have the legal status of servants, and who may be in a position to satisfy substantial claims against them. The right of the master to recover from his servant damages which a master has had to pay on account of the servant's negligence, has recently been exhaustively considered in the course of the well-known case of *Lister* v. *Romford Cold Storage Co.*[2] and in the final decision it was laid down quite definitely that the master has this right. This decision, of the House of Lords, may well have far-reaching industrial effects.

In the field of library and information work it is perhaps a little difficult to envisage situations in which the ruling in the *Lister* case would apply. If, however, we take the situation, which is by no means impossible, of a visitor to a library on whose head the librarian has unfortunately dropped a heavy book, causing him injury, then it would appear that the librarian's employer would be liable for any resultant damage, and that he could in turn recover such damage from the actual employee responsible. It must, of course, be emphasized that the recovery of such sums would have to be by process of law and could not be carried out by a deduction from the employee's remuneration.

Some readers may say 'But I am sure my company would not do that', but it must not be forgotten that the matter may not be one for the employer to decide. In the *Lister* case although, nominally, action against the servant was brought by his master, in effect it was on the insistence of an insurance company. Most employers have insurance policies to cover possibilities of this type, and such an insurance policy normally contains a clause giving the insurance company full right to fight any action in the employer's name even though, as would appear to have been the circumstances in the *Lister* case, this was against an employer's true wishes in the matter. It is safe to say that we have not heard the last of the *Lister* decision.

RESPONSIBILITY FOR INCORRECT INFORMATION

On this question of negligence by a servant we must assume that the giving of incorrect information would come within this head. The writer is not aware of any cases on this point but, if it has been held that when a person hired as a lorry driver makes a mistake in driving that lorry, which mistake causes financial loss to his master, he must then reimburse the master for that mistake, it does not seem that there is, in principle, any difference if a person hired for an intellectual activity makes a mistake and that he should not likewise be responsible. In any such case, it would have to be a definite mistake of *fact*, not a wrongful opinion or interpretation of facts. To take an obvious example. If an information officer or librarian were asked to find out whether a certain train ran on Sundays and stated that it did, whereas it could be shown that the current time-table clearly indicated that the train did not run, then it would seem, arising from the *Lister* case, that if the person acting on that information had to take a taxi as a result of being misinformed, he might have a case against the librarian concerned.

Liability for carelessness is not confined to work done for an employer; a voluntary act can impose liability. In the words of a judgment given the best part of a century ago, but which is still good law, 'if a person undertakes a voluntary act, he is liable if he performs it improperly, but not if he neglects to perform it'.[3]

SERVANT'S DUTY OF FIDELITY TO HIS MASTER AND TO OTHERS

A servant must not act in a manner contrary to his master's interests and he must, if there is a conflict between his own interests and those of his master, put his master's interest first. He owes a duty of fidelity to his employer and whilst it may not be possible to say with certainty 'exactly how far that rather vague duty of fidelity extends'[4] there is no doubt that it is a violation of this duty for a servant to work, in his spare time, for a competitor of his master, although it was in a recent case made quite clear by the court that there was no intention to place any undue restriction on the right of an employee to make use of his leisure for profit.[5]

Although the duty of a servant is primarily to his master, circumstances can arise when he may have a duty to others also. Apart from the fact that any act by a servant, as by anyone else, is subject to the general law, it is possible to think of some instances, in our own field, where liability in tort to a third party could arise. A communication might be made to the servant, in privileged circumstances, the repetition of which (quite apart from a breach of confidence) might make the servant open to an action. For instance, if a typist takes down a letter which contains a defamatory statement, the dictation of the letter to the typist could be slander by the dictator, but even if such dictation could be proven by the person defamed, no action would lie against the originator of the letter (unless the slander was in one of the special groups actionable *per se*) in the absence of proof of special damage, but if the typist were to make a carbon copy with which to regale his friends at lunch then this would amount to the publication of a libel for which he could be sued.

Incidentally, the point is often asked concerning the legal position when a letter which could be defamatory is dictated. The answer would seem to be that at the moment of dictation no document is in existence, hence the defamation, if any, is slander. As the typist brings the document into existence he cannot publish it to himself, hence there is, at this stage, no libel. It is assumed that the recipient of the letter has a common interest with the sender, so that privilege can be claimed. If, however, the dictator, having received the letter from the typist returns a copy to him for filing then it might be argued that this constituted libel and, in the absence of a common interest, actionable. Moreover, if the dictation was not face to face but by means of a dictating machine then, since the statement is recorded in a permanent form, it is probably libel and actionable *per se*, even if publication were only to the typist.

A servant is bound to obey the orders of his master provided that they are lawful and reasonable, inasmuch as they deal with the kind of work for which the servant is hired. The fact that an order is distasteful or even harsh in the sense that it may be personally inconvenient for the servant to follow it is, strictly speaking, no excuse for disobedience. There is an old case,[6] which, however, is still considered good law, where a domestic servant wished to have time off to visit her sick mother; such leave was refused and on the servant nevertheless absenting herself from her employment she was summarily dismissed and, in the ensuing action for wrongful dismissal, was held to have no remedy against her master for breach of contract. Nowadays, in view of the generally better relationship that exists in industry, it is unlikely that such a case would recur.

CONFIDENTIAL INFORMATION

The question of confidential information is one which although coming within the general field of relationship between master and servant can also be of particular significance to those concerned with information work. Among the duties of a servant is respect to his master's confidence. This is a common law duty quite apart from any statutory obligations which may arise from the Official Secrets Act or the Atomic Energy Act.

A person who owns a trade secret and who employs persons under contract, which can be express or implied, can restrain, by means of injunction, any employees from using such knowledge to the detriment of the employer.[7]

Whilst secret processes are not very much used today, since it is more useful to seek the protection of a patent, cases of this type may still arise. Moreover, outside the technical field, confidential information of a commercial character, such as lists of customers, may very often come to an employee's knowledge.

The obligation to respect the confidence of others is not limited to cases where the parties are in any formal contractual relationship. If a defendant is proved to have used confidential information obtained directly or indirectly from a plaintiff without the consent express or implied of the plaintiff, he will be guilty of an infringement of the plaintiff's rights.[8]

Where the circumstances of employment are such that an employee may thus have valuable confidential information, it is often sought by the employer to lessen the risk of possible loss by making it a term of the contract of employment that the employee shall not, after leaving the employer's service, take up for a specified time or within a specified area employment of a similar type. In other words his liberty of accepting employment after leaving his master's service is restricted. Such a contract is primarily one which is in restraint of trade, and since as a general principle such contracts are against public policy, they have to be drawn up with the greatest care if they are to prove valid. The general principle on which the courts act in interpreting such restrictive clauses are that any attempt to restrict a man from using to the full his knowledge and experience will be resisted but that a restraint which is merely designed to protect a master from the unfair competition of a former servant will, if it is supported by consideration, be upheld. This means that restraint will usually only apply to a servant who has been in a superior position where, by the confidential and special nature of his work, he has come into possession of such knowledge of the master's business that it would be unfair for him to work in a similar business either within a limited radius or for a limited time. A general restraint, unlimited in time or area, will hardly ever be upheld.

One can imagine cases where it would be difficult to decide whether a particular procedure, learnt by a servant, was a 'secret' or whether it was part of his general experience in that trade acquired in the master's service. Hence a restrictive covenant, limited in nature to what is thought will be upheld by a court, is frequently inserted in a contract of service.

PATENTS

The question whether or not an invention made by an employee belongs to the master or to the employee himself will, unless it is specifically dealt with in the contract of employment, depend upon the work for which the servant has been hired. Obviously if, for example, he is taken on as a research scientist then it must have clearly been in the minds of the parties that he might discover improvements to processes or similar patentable inventions, and as he is primarily hired for such work then there is no doubt that the patent will be the property of his employers. This would undoubtedly be the case even if the invention had been developed by the employee in his own spare time and possibly even with his own facilities, provided that the invention was primarily concerned with the scope of activity of his employer. On the other hand if the employee's work was such that it would not normally be expected that he would have the opportunity of making any inventions, then it could probably be argued that any such invention was his own property. For instance, if a person were employed in a chemical works, say in the capacity of a costs clerk, and by a study of the process for the manufacture of a product was able to develop a patentable invention in this field, then it might be difficult for the employer to argue that this was the work for which a costs clerk was hired and hence that he, that is the employer, should have the benefit of the invention. Obviously there will be border-line cases and in the case of, say, a library worker, who perhaps for this purpose had better be described as an information scientist, the matter could be one of dispute although it is submitted that if the individual's work was primarily scientific then the mere fact that he was not working in the laboratory would not prevent his employer from successfully arguing that he (the employer) should have the benefit of any invention. Even if the employee should take out the patent in his own name and thus become the legal owner of the patent, the employer could put up a claim to the equitable ownership and he could, even after the employee had left his service, successfully insist that the employee should take all steps necessary (at, of course, the employer's expense) in order to further the patent application and to transfer it to the employer.[9]

COPYRIGHT

This is probably the most important legal aspect of information work. Copyright, like patents, is a form of ownership of property. Copyright is the protection which is given to all written work as soon as it has been committed to paper; no registration or other formality is required. As soon as anything is written it is copyright and may not be reproduced without the permission of the owner of the copyright. Copyright in musical, film or similar works, sculpture, architecture, etc., is subject to somewhat different rules from those applicable to literary works and will not be considered here.

It will be noted that the expression just used was 'owner of the copyright', and not author. The latter is the owner of the copyright except, and this is a very important exception where employees are concerned, when the work has been produced by the author in the course of his employment, under a contract of service, in which case the employer is the copyright owner. Thus if, in the course of his duties, an engineer is instructed by his employer to write a book on the work he is doing (or on anything else for that matter), the copyright vests in his employer who will be the sole owner thereof. It is, however, not invariably the rule that the copyright in any literary work carried out by an author under contract of service is necessarily the complete property of his employer. If such work is done by an employee of a newspaper or periodical proprietor, and for publication in a newspaper or periodical, then the employer has the copyright only for publication in periodicals, etc., but any other copyright (e.g. book rights, film rights) will remain with the owner. This is, of course, unless there is a contract of service in which the copyright position has been specifically mentioned, when it is open to the parties to make whatever arrangements they wish.

Matter to be the subject of copyright must have a concrete form and be expressed in some permanent way. A mere suggestion cannot be protected by copyright. This has been very well expressed in a judgment given in a copyright case some years ago in the following words—'There is no copyright in an idea. A person may have a brilliant idea for a story, or for a picture, or for a play, and one which appears to him to be original; but if he communicates that idea to an author or an artist or a playwright, the production which is the result of the communication of the idea to the author or the artist or the playwright is the copyright of the person who has clothed the idea in form whether by means of a picture, a play, or a book, and the owner of the idea has no rights in that product'.[10]

From the librarian's and information officer's point of view one of the main interests in copyright lies in the position with regard to copying, by photocopy or otherwise,* of published works. This is one of the aspects of copyright law which has been considerably amended by the Copyright Act, 1956. It is too soon since the passage of that Act for there to have been any decided cases on s. 7, which is the one of particular interest to us in this connection. The position under this section is that in the case of a periodical publication, the copyright of an article contained therein is not infringed by the making or supplying of a copy of the article, if such copy is supplied by a library of a prescribed class and certain conditions are complied with. Certain rules as to what libraries are included within the prescribed class are laid down in the Act, and also in the regulations made thereunder.[11] The main features of these requirements are that the libraries must not be established for profit, that the person to whom the copies are supplied will only use them for the purpose of research or private study, that no one can get more than one copy of the same article, that no such copy covers more than one article in any one publication (although separate copies of separate articles from the same publication are apparently permitted), and that people obtaining copies must pay the cost of their production to the library supplying them.

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* It must be remembered that from the legal aspect there is no difference whether copying is by photocopy or transcription by hand or typewriter; as, however, the tediousness of such transcription would generally make it impracticable photocopying is, in effect, the method which has caused problems to arise.

The class of library which is empowered to supply copies under these provisions covers the deposit libraries (i.e. the British Museum and the other five libraries coming under this description), libraries of schools, universities and similar educational bodies, public libraries, any library operated by a Government department and libraries operated by organizations of a scientific, literary, religious, etc., nature. The 'no profit' rule applies of course in every case.

These rules are fairly liberal and are a great improvement on the position prior to the passage of the 1956 Act since they place on a definite legal footing what had previously been tolerated and was to a large extent a matter of co-operation by certain publishers subscribing to the Fair Copying Declaration. As will be seen later, this Declaration is by no means superseded by s. 7 of the Copyright Act. It will be noted that under the proviso of this section no copies may be made by a library which is administered for profit. The very large number of industrial scientific libraries would undoubtedly come under the ban, since although the library is not run for profit, the library forms part of a commercial concern which, as a whole, is of a profit-making character. The fact that the profit from the operation of the library itself is indirect would not, it is submitted, take it outside the class of profit-making bodies.[12]

Hence, if the library of an industrial organization happened to have in its possession a somewhat unusual periodical, not readily available elsewhere, and such library were asked, by anyone outside the organization, for a photocopy, they would, under the terms of the Act, be precluded from supplying such copy (unless of course the permission of the copyright owner were obtained). Presumably, however, this difficulty could be overcome by lending the periodical to an approved library, who could then make the photocopy for whoever needed it.

The further question arises as to whether an industrial library would be entitled to make a photocopy for the use of a member of its own organization, i.e. say an analyst who is an employee of the firm running the library. If we refer to s. 7 of the Copyright Act then it would seem that the library has no right to make such a copy without being guilty of copyright infringement.

The Fair Copying Declaration is not of much help on this aspect since the scope of this declaration is likewise limited to non-profit-making organizations. The position thus seems to be that if an analyst employed in industry sees in a technical journal an article on analytical procedure which he wishes to have with him at the bench for ready reference, he cannot ask the library of his company to make a copy of this, but he may obtain a copy from, say, the

Science Library or the Chemical Society. He may only obtain one, of course, and if his colleague in the next room also wants a copy, he will have to make separate arrangements to get his own. Considering that most large firms today have photocopying equipment on their own premises, one really wonders to what extent this strictly legal procedure will be followed. The difficulty can, of course, technically, be overcome if the analyst concerned were personally to operate the photographic equipment and make his own copy. The Act only restricts the supplying of copies to others, it does not, in the writer's view, restrict the making of copies for one's private and personal use, which would appear to be a typical example of the 'fair dealing' referred to in s. 6.

It might of course be argued that the making of one or more copies by the library of a private organization for distribution and use by the employees of the organization was a legitimate interpretation of the 'fair dealing for purposes of research' which is permitted by s. 6 but, until the matter has been decided by the courts, such an interpretation must be considered as doubtful.

The terms of s. 7 of the Copyright Act and of the regulations made thereunder are very similar to the Fair Copying Declaration sponsored by the Royal Society and which Declaration was obviously the basis for the present legal rules. It would at first sight appear that, these legal rules having been made, the Fair Copying Declaration has been superseded, but on comparing the two there appear to be one or two points of difference. An important distinction is that under the Act no copy may extend to more than one article contained in any one publication (which presumably must be taken to mean any one issue of a periodical). No such restriction is included in the Fair Copying Declaration, which however does limit too extensive a copying by curtailing the copying right to 'a part of an issue', which is very different from 'one article'. A journal may have numerous articles (for example, the letters in *Nature*) of which even two or three would only form a small part of the total contents of the issue.

Moreover, the Fair Copying Declaration whilst stating that the supplying library must not make a profit from the sale of photocopies does not, unlike the Act, *require* that a charge be made.

Under the Act the person (who may of course be a corporate person) requiring a photocopy from a periodical must state that it is so required 'for purposes of research or private study', whilst under the Fair Copying Declaration the permissible field is somewhat wider, being given as 'for the purpose of private study, research, criticism or review'. It is doubtful if there is really much difference, since although the inclusion of 'criticism or review' in the Fair Copying Declaration conditions seems to imply that reasonable extracts from the published work could be quoted, such a practice is anyway permitted under the 'fair dealing' clause of the Act (s. 6). On the other hand, the omission of the words from s. 7 of the Copyright Act does not, however, prevent use of the photocopies for criticism or review since the application of s. 7 does not exclude the operation of s. 6.

The various rules which have just been discussed apply to photocopies from periodicals (to which the Fair Copying Declaration is limited). If the work to be copied is other than an article in a periodical publication then such copy may not be made if the librarian who is to make such copy either knows, or can by reasonable inquiry ascertain, the name and address of the person who may authorize the making of the copy.

Somewhat less restrictive, although generally similar, conditions apply to copies made by a prescribed library for supply to another prescribed library when, in the case of either books or periodicals, the whole publication may be copied (although in the case of matter other than an article in a periodical the requirement is still maintained that such copying is only permissible in the absence of knowledge of or reasonable inquiry for the name and address of the person who can authorize copying). Moreover, the class of library is extended to include any library which makes its works available to the public free of charge, but with the restriction that profit-making libraries may only supply, and not receive, such copies. It is not too clear what types of libraries are envisaged that would thus come within the Second Schedule of the Regulations and be excluded from the First Schedule but there may be libraries which are profit-making in the sense that they are operated as part of a commercial concern but which nevertheless admit the public or, more probably, make their holdings available by way of inter-library loans.

RESPONSIBILITY FOR LOANS

The work of a library or information section would be severely restricted unless books and other publications could be borrowed. This raises the question as to who is responsible if a borrowed article is lost or damaged whilst in the possession of a borrower. From the legal point of view borrowing is a bailment and the rules about the respective responsibilities of bailor and bailee are among the oldest of legal principles and this particular topic is one which features prominently in Roman law.

The practical point is who is to blame, or at least who is legally responsible, for a borrowed publication which is lost. This will depend whether or not any conditions are attached to the loan. If, as is frequently the case, the lending organization makes it a condition of the loan that the borrower shall be responsible, then in effect the borrower is in the position of an insurer and if, irrespective of cause or blameworthiness, the publication is lost or damaged the borrower must make the loss good. If, however, as sometimes happens, no particular conditions are attached then all that is expected of the borrower is that he shall exercise a reasonable standard of care, that is to say he would be expected to treat the borrowed article in the same way as a reasonable man, that beloved fiction of the law, would treat an object of similar value belonging to himself. If, for instance, a book of no great rarity and average value were borrowed and then stolen from the borrower's house or locked car then it appears unlikely that the borrower could be held responsible, nor if he were returning such publication to the library by ordinary post. If, however, the publication was one which would be very difficult or impossible to replace then obviously a higher standard of care would be called for and unless such standard of care had been exercised the borrower would have to make good the loss or otherwise recompense the lender.

WHERE TO LOOK UP THE LAW

There is a saying, attributed* to George III, that 'lawyers do not know much

* According to Prof. G. L. Williams.

more law than other people but they know better where to find it'. Like most aphorisms of this type there is a considerable degree of exaggeration but with more than a grain of truth in it. Perhaps more than in any other field of learning lawyers would be lost without extensive library and bibliographical facilities, and it is not a very great exaggeration to say that the work of many lawyers is in fact information work in a specialized field.

Some of the leading law libraries, such as those of the Inns of Court, are private and do not normally allow outsiders to make use of them; many universities also have extensive law libraries. However, for the non-lawyer, the legal sections of any good public reference library are probably adequate.

In this country we have two primary sources of law, statute law and common law. The first is the law which is laid down by Parliament and this is expressed in Acts of Parliament. Such Acts are published and are obtainable from H.M.S.O.

Acts of Parliament can be divided into two classes, Public Acts and Private Acts. Public Acts, that is those which normally affect the country as a whole, are at intervals gathered together in a series of volumes entitled *Statutes revised*, and when printed in this form the Acts incorporate any amendments, up to the date of publication, which may have been made by subsequent Parliamentary legislation. The latest (third) edition of the *Statutes revised* (32 vols.) contains all Public Acts up to the end of 1948. Since then an annual volume appears which contains all the the Public General Acts (also the Church Assembly Measures) published during the year and which includes a comprehensive index and a table showing the effect of the year's legislation on previous legislation. There is no consolidation of Private Acts, but they are published in annual volumes which are entitled *Local and personal Acts*, there is also a consolidated index to these Acts covering 1801 to 1947, with subsequent annual indexes.

Private Acts may be distinguished from Public Acts by the method of citation, inasmuch as the chapter number is given in roman numerals, whereas for Public Acts the chapter number is given in arabic numerals. If such number is in italic arabic numerals then the statute is a Personal Act which together with Local Acts forms the class of Private Acts. Further information and discussion on the differences between various classes of Acts will be found in a special pamphlet published on the subject by H.M.S.O.[13]

In addition to the *Statutes revised*, and the subsequent annual volumes, there are also three further annual volumes dealing with statutes which should be noted; these are *Chronological table of Statutes*, *Index to the Statutes in force* and *Annotations to Acts*. All these are published by H.M.S.O. and whilst the scope is reasonably adequately indicated by the title a brief description of the ground covered can be found in the H.M.S.O. publication *Official indexes, lists, guides, catalogues*, and also in H.M.S.O. sectional list No. 57 entitled *Government legal publications*.

An Act of Parliament must be regarded as a wide primary source of legislation, but it is not possible for Parliament to cover by such direct legislation all of the multitudinous directions which the complex modern state has to give to its citizens. Such directions cover every aspect of life and have even been extended to official instructions on how and how not in certain circumstances to blow one's nose. This item of legislation will be found in the Factories (Luminising) Special Regulations (S.R. and O. 1947, No. 865), Regulation 31 of which includes the direction that 'no such person shall, in the course of such employment, make use of any pocket handkerchief other than a paper handkerchief'. Such subordinate legislation is contained in what are today known as Statutory Instruments and which, prior to 1948, were known as Statutory Rules and Orders. The annual output of such documents is in the region of 1,000 to 2,000. All the Instruments up to the end of 1948 have been collected in one set of twenty-five volumes, and since that date annual collected volumes are issued. Similarly to the index to the statutes there is a companion publication (issued every other year) entitled *Guide to Government orders* in which the subject headings are the same as those used in the *Index to Statutes* which I have just mentioned. But subject headings can change, for example Oil in Navigable Waters used to be a separate heading but is now incorporated in Merchant Shipping. A further difficulty that can arise is that certain legislation such as Suspension Orders made by a Secretary of State under powers delegated to him are not published by H.M.S.O. and have to be obtained (when one becomes aware of their existence) from the Government Department concerned.

There is a rather important snag in dealing with Statutory Instruments, and that is that those which are issued under emergency powers are not included in this guide but are indirectly covered by a list of those Defence Regulations which are still in force; Statutory Instruments issued under such powers are, however, included and indexed in the annual volumes.

Tracing a particular regulation made under these emergency powers is not an easy matter and in fact this field is so complex that it has been known for a Government department to issue an Order and then have to issue another Order because the first Order was issued under powers which either no longer existed or were inapplicable.

There is also published an annual table (which is cumulative) entitled *S.I. effects* showing the effect of Acts and Instruments published after 1st January 1949 on the collected edition of Instruments and also a numerical list of S.R.O.s and S.I.s which indicates those which were still current at 31st December 1952 and for which annual supplements are issued.

Useful guidance as to the scope and interpretation of various specialized legislation is given by guides published by H.M.S.O. such as, for instance, those to the Explosives Acts and the Factories Acts.

The second primary source of law which has just been mentioned is the common law. This expression can be briefly defined as covering that part of English law which is not laid down by Acts of Parliament, and which consists of ancient principles which have been law from olden times, as well as the extensions of these principles made since then by judges when deciding cases brought before them. It is this system of judge-made law, whereby a decision of a superior court (in similar circumstances) is binding on courts of equal or inferior status for the future, which is a characteristic of English law and which is responsible for an enormous bulk of legal literature in the form of law reports. Law reports will be only briefly mentioned, since they are not easy ground for a layman and are essentially lawyer's literature.

At present there are two principal series of law reports, the Weekly Law

Reports (later reissued as the Law Reports) which are published by the Incorporated Council of Law Reporting and the All England Reports, which are published by Butterworths. These two series largely overlap, and whilst they cover the majority of cases which are believed to be of permanent or semi-permanent interest, cases on specialized topics may also be found in other series of reports which deal with limited fields such as rating and taxation, shipping, patents, restrictive practices, town and country planning and property law, etc. Mention may also be made of the Law Report published daily in *The Times* newspaper during term and which, being prepared by barristers, may be cited in court.

So much for what we may call primary sources of legal information. Turning now to the secondary and more readily convenient publications there is a vast number of law books ranging from the very elementary pamphlet for the layman to voluminous treatises for experts.

There is one particular word of warning which is especially important to the layman who wishes to consult a law book, and that is, make quite sure it is up to date and even then you will have to verify whether, since the date of publication, there has been any change in the law on the particular point you are checking. It is important to remember that in this respect law differs from the physical sciences. If you were to consult a twenty-year-old book on chemistry, what information you would find there would almost certainly be still correct, although in certain fields it might now be very incomplete; in others, where advances have been less rapid, it might be quite a reliable guide. In the field of law a book of that age could very likely lead you seriously astray. There has, in recent years, been a spate of legislation and also important decided cases, and the job of keeping up to date with the law is probably more difficult than keeping up to date with scientific advances. This is, of course, recognized by the legal profession, and it is now customary for many of the more important law books to issue, in between the appearance of new editions, supplements to keep the work up to date. There are also more general publications which summarize recent changes and probably the best of these is a monthly publication entitled *Current law*, which has a very complete coverage indeed, and which is extremely well indexed and divided into sections. The monthly parts of this publication are each year consolidated into a year book which is a complete source of all changes and developments in law for the year concerned.

If you want to find out what books deal with a particular branch of law a most useful guide entitled *Where to look for your law* is published by Sweet & Maxwell, the latest edition is the twelfth (1957); this also includes a list of law reports and periodicals; the latter, as in other branches of specialized knowledge, form an important part of the literature of the subject.

REFERENCES

1. per Denning, L.J. in *Stevenson, Jordan and Harrison Ltd.* v. *Macdonald and Evans.* [1952] 1 T.L.R. 101 at 111. (This is an interesting case dealing with questions of copyright, master and servant, and alleged disclosure of confidential information.)
2. *Lister* v. *Romford Ice and Cold Storage Co. Ltd.* [1957] 2 W.L.R. 158.
3. per Willes, J. in *Skelton* v. *London & North Western Railway* (1867) L.R. 2 C.P. 631 at 636.

4. per Lord Greene, M.R. in *Hivac Ltd.* v. *Park Royal Scientific Instruments Ltd.* (1946) 62 T.L.R. 231 at 233.
5. Hivac case, *supra*, cf. *Byrne* v. *Statist Co.* [1914] 1 K.B. 622. (Copyright of translation made in employees free time.)
6. *Turner* v. *Mason* (1845) 14. M. & W. 112.
7. *Morison* v. *Moat* (1852) 21 L.J. (C) 248; *Amber Size and Chemical Co.* v. *Menzel* [1913] 2 Ch. 239.
8. *Saltman Engineering Co. Ferotel and Monarch Engineering Co. (Mitcham)* v. *Campbell Engineering Co.* (1948) 65 R.P.C. 203. (There is a common law right of property in information, which is distinct from copyright, cf. *Exchange Telegraph Co.* v. *Gregory* [1896] 1 Q.B. 147.)
9. *British Celanese* v. *Moncrieff* [1948] Ch. 564.
10. per Farwell, J. in *Donoghue* v. *Allied Newspapers* [1937] 3 A.E.R. 503.
11. Copyright (Libraries) Regulations, 1957. S.I. No. 868.
12. *Stanger* v. *Hendon Borough Council* (1948) 64 T.L.R. 164.
13. Acts of Parliament; Some distinctions in their nature and numbering (*House of Commons library document No.* 1) H.M.S.O. 1955.

N.B.—For the benefit of readers unfamiliar with the citation of legal references it may be explained that where the date is an essential part of the reference it is placed within brackets [ ] whilst when it is added for interest only, i.e. when the volume number or other information is sufficient to trace the reference the date is placed within parentheses ( ).

DISCUSSION

The Chairman (MR. R. BRIGHTMAN) in opening the discussion said that the paper covered a very wide field and that it would only be possible, in the time left, to deal with the simple and practical aspects of the subject. He suggested that further discussion might take place at the lunch table.

MR. F. NEWBY (Hardman & Holden Ltd.) asked about negligence in patent searching. Suppose an employee overlooks an existing patent when applying for a patent on behalf of his company, and as a result his company loses money. Is the employee responsible?

MR. V. BISKE said that professional negligence can be actionable if it is a clear-cut case.

MR. E. H. MASON (County Librarian, Cheshire) said he found some of Mr. Biske's remarks quite alarming. He asked how it is possible to isolate an information officer's responsibility when he is really only part of a chain. *Bradshaw's Railway Guide* is covered by clauses printed in each copy. An article in the *Library Association Record* discussed a query on the length of the Amazon. A number of books were consulted and each gave a different answer. What should the librarian do? Should he hand the books to the inquirer and say 'Use these'?

MR. BISKE said that a librarian was only responsible if obviously negligent, e.g. if he used an out-of-date source, but not if he was the victim of a misprint. If he made a wild guess at the length of the Amazon then he could be responsible.

MR. J. G. MCPEAKE (City Librarian, Chester) said he would like to extend Mr. Mason's query by asking if an information officer is responsible for erroneous information given by his staff.

MR. BISKE replied that a master could be responsible for incorrect information given by his servant; for instance, a pharmacist is responsible if an error is made by an unskilled assistant dealing with dangerous drugs.

MR. D. MASON (Imperial Chemical Industries) asked the amount of damages which would be claimed by a copyright owner from a librarian who made a photocopy of an article in a journal.

MR. BISKE explained that technically the owner can sue but it is doubtful if he would because, in effect, he had only lost the price of a journal—perhaps 7*s*. 6*d*.

MR. J. E. BOLTON-ALLEN (Automatic Telephone & Electric Co. Ltd.) suggested that industrial libraries were non-profit-making.

MR. BISKE made it clear that in his opinion an industrial library is profit-making within the meaning of the Act.

MR. J. L. IRELAND (Peter Spence & Sons Ltd.) asked if there is any time limit mentioned in the Copyright Act, during which copies cannot be made without permission.

MR. BISKE said that in general the time limit is fifty years.

A NEW METHOD FOR DUPLICATING CATALOGUE CARDS

BY F. LIEBESNY, B.SC., A.L.A.

Patent Department, The Mond Nickel Company Limited

IN the field of technical information and documentation the problem of compiling an abstract bulletin and then providing catalogue cards of the abstracts for a card index has hitherto implied the necessity of completely retyping the information given in the abstract bulletin on to stencils for subsequent duplication by the usual processes. It can be seen that this old method, which was unavoidable in the case of abstract bulletins with formats different from that of the catalogue cards, was unnecessarily cumbersome and time-consuming because of the second typing stage. The new process obviates this retyping stage and thereby ensures a consequent saving in time and expenditure as shown in Table I.

TABLE I

	Old method per year	*New method per year*	*Saving*
Retyping, checking, etc.	50 days	25 days (editing)	25 days
Duplicating ..	1/2 ream BANDA sheets and copy paper £5 14*s.* 50 hours	50 hours	£5 14*s.*
Cards	5 in. × 3 in. approx. £8	Gestetner 'B' Board approx. £7. Cleaning fluid and adhesive 7*s.*	£1 minus 7*s.*
Cutting-up ..		25 hours	3½ days
		Total annual saving	£6 7*s.* 21½ days

It has hitherto been the practice in this information department to publish an average of twenty-five abstracts of patents per week in a bulletin of quarto format (10 in. × 8 in.). The abstracts were then retyped on to a Banda stencil for duplication on 5 in. × 3 in. cards. By slightly rearranging the format of the abstract bulletin, i.e. by giving non-essential references in a 3 in. margin, it has become possible to display the abstract in a column 5 in. wide. After the stencil has been used for the first time for duplicating the abstract bulletin, it is cleaned with a special cleaning fluid (supplied by the manufacturers of the stencils) and cut up into pieces 3 in. deep. Thus a short abstract may have a large blank space at the head of the card while a large abstract will be subdivided on to two or more pieces, i.e. cards. The cut-up pieces are then reassembled by means of a special glue and passed again through the duplicator. Cards are run off on special thick board which is supplied in strips 13 in. long, 5 in. wide. After duplication the strips are cut into 5 in. × 3 in. cards on a guillotine. Table I compares the steps used in the old and new methods and shows the saving on an annual turnover of approximately 1,250 abstracts or 10,000 catalogue cards (eight cards per abstract*).

Although the saving shown is not outstanding (0.2*d.* per catalogue card or 1.6*d.* per abstract) the time saved amounts to almost half a day per week.

OLD AND NEW METHODS OF LAYOUT IN THE ABSTRACT BULLETIN

Old Method

Pat. No. 27. U.S. Patent No. 2,780,543
HIGH RESISTIVITY ALLOY
Appln. 17.5.55. Patented 5.2.57.
Patentees: J. F. Schneider & C. S. Sivil.
Assigned to: Baker & Co. Inc.

The resistance alloy consists of Pd 20–62 (pref. 30–50), Fe 4–18 (7–12), Au 28–70 per cent and has a resistivity of 450–1,200Ω mil ft. Aging at 300–600°C is also claimed.

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* The eight cards per abstract are made up as follows:

(*a*) number card, e.g. British Patent 630,070;
(*b*) name cards for Patentee and/or Inventor, e.g. J. Smith & Son, Inventor G. Brown;
(*c*) subject cards.

LETTER TO THE EDITOR

MADAM,

In Prof. Bernal's article in the December (1957) issue of the *Journal of Documentation*, on 'The supply of information to the scientist: Some problems of the present day', there are several statements which I do not feel should go unchallenged. I therefore trust you will allow me some space for comments.

On p. 197 he writes: 'what we are concerned with is not the *wants* of the scientist for scientific information but with his *needs* for it, and these are vastly different questions. . . . those concerned with information services, unless they have acquired it by close contact with the scientists they are working with—and this is not generally the case—do not know and cannot know what kinds of scientific information are needed and in what form'. Since the large majority of information officers, who provide the information services of which he is writing, are in fact science graduates, and many of them have at one time been research scientists and look upon information work as a type of research, Prof. Bernal's statement can mean only that he is unacquainted with any of the many good information services which now exist. The primary duty of the information officer—or, as better titled, information scientist—is to remain a scientist first and foremost and bear constantly in mind the research outlook.

On p. 199 he writes: 'Now it may seem a counsel of perfection to demand of an information service that it provides its users with things they do not even know they want'. This provision is very often a most important part of an information scientist's job; he reads far more than the research worker can hope to do, and in a much wider range of subjects. He is often in a position to spot just that piece of unexpected relevant information which, from his knowledge of the researcher's work, he can see will be of importance. Again, even when supplying information in response to a specific inquiry, the information scientist may also be able to supply details of further work which may enhance or (alas, too often) invalidate the otherwise apparently sound data which were asked for. I could give several such cases from my personal experience.

On the same page he writes: 'the ability to find the required information must be that of eliminating information which is irrelevant, duplicate, obsolete, inadequate, and unreliable. . . . It might be well . . . that searches should be limited to a year, two, or five years, according to the subject, . . .' (assuming that earlier information will be in books, etc.). Again, it is of course the information scientist's job to discriminate wisely in the presentation of information, to be so trustworthy a substitute for the researcher in the literary side of research that he can function in an advisory capacity, presenting adequately what is relevant, and saving the researcher's time by eliminating the irrelevant, the obsolete, etc. On the other hand, experience shows that books and other reviews, written by scientists who often have no training in information work, are rarely complete even in regard to valuable past literature. We know now how the work of a Mendel, a Gibbs, a Tswett, can lie disregarded for years;

how many others are there still to be rediscovered? Information services must be capable of discovering them.

On p. 203 he writes: 'It is evident that, at any rate for search and by implication for storage [of information records] also, the central question is one of classification but it is not at all clear that the classification which gives the most rapid retrospective search has necessarily any other values. In fact it should be designed, one imagines, in each field strictly in relation to the operation of suitable search machinery'. Prof. Bernal has, I am glad to see, appreciated that machine searching must be inadequate without a suitable basis in classification, but to realize the new possibilities which recent developments in classification promise he should read the recently published proceedings of the international conference at Dorking.* In particular it is essential to see that the classificatory principles are essential to adequate storage and retrieval, and that they should not be chosen or distorted to match some available machine (designed, in most cases, for other purposes or to make searches of material to which no classificatory structure has been given); on the contrary, machines should be designed to concord with and develop the classificatory principles which are needed.

On p. 204 he suggests that volunteer groups of 'knowledgeable people could be found . . .' and 'they might do the work of machines . . . probably very much more efficiently and quickly'. Whilst not disagreeing that certain persons may happen to know the answer to a particular question and can hence give it more quickly than a machine searching a mass of records, the problem would appear to be the highly complex one of locating that individual each time. It is part of the function of an information scientist to include in his knowledge of information sources as many such individuals as he can. Such individuals may often be another information scientist working in the field in question. Prof. Bernal should at least consider using available information services to better advantage before suggesting new methods.

Finally, on p. 208, he writes: 'The number of reports, reviews, abstracts systems, and so forth, are already far greater than anyone can read in his own field. . . . A grading of reading—for detailed requirements, for overall requirements, for general culture—should not be impossible and the services of information officers should see the right grade goes to the right person at the right time'. Surely Prof. Bernal is aware that it has *always* been the essential task of the information scientist to present the right information to the right person at the right time.

I therefore seriously suggest to Prof. Bernal that before he goes to the Washington Conference he should visit and study some of the larger information departments in industry, research associations, etc., in this country, and see for himself what is being done. He may be surprised!

Yours faithfully,
J. FARRADANE.

'Torran',
Crofton Road,
Orpington,
Kent. 21st January 1958.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB CALENDAR

FEBRUARY

WEDNESDAY 26th. Economics Group visit to the British Aluminium Co., Intelligence Department, 5.45 p.m.

MARCH

WEDNESDAY 5th. Conference on Scientific and Technical Translation.

APRIL

FRIDAY 11th–SUNDAY 13th. Aeronautical Group Conference. See paragraph below.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference. Nottingham University.

Annual Elections

Dissatisfaction has been widespread with Article 17 (d) and steps are being taken to have it amended in time for this year's annual elections. At present, members are required to vote by striking out of the ballot paper sufficient names to reduce the number remaining to the exact number of vacancies to be filled on the Council. This has meant that members have, in effect, been voting for the full number of persons to be elected, while many would have wished to vote for some lesser number. Provided the approval of the Board of Trade is received in time, it is proposed to hold the necessary General Meeting on 19th March to approve an amendment which will permit members to vote for a lesser number of candidates than the number of vacancies, if they so wish. As it seems clear that the membership would wish to support such a change in the Articles and that discussion of the proposal is unlikely to be required by the membership, it is hoped to hold the special meeting in conjunction with a Council meeting, one of which takes place on the 19th March, so as to ensure the necessary quorum of twenty-five members.

Northern Branch

The Yorkshire Group of the Reference and Special Libraries Section, Library Association, has invited members of the Northern Branch of Aslib to attend a meeting at 2.30 p.m. on Wednesday 5th March at the Institute of Technology, Bradford. Mr. C. W. Cleverdon, Chairman of Aslib Council and Librarian, College of Aeronautics, will speak on research problems in librarianship. Members who wish to attend this meeting should get in touch with Mrs. A. Mason, Honorary Secretary of the Yorkshire Group, Library Association, Reference and Special Libraries Section, at the Central Library, Leeds 1, as soon as possible.

Aeronautical Group

The seventh annual conference of the group will take place on 11th to 13th April at the College of Aeronautics, Cranfield. Delegates will assemble on Friday evening. The Annual General Meeting will be held on Saturday, followed by papers on alphabetical indexing and on the use of periodicals in aeronautical libraries. The Sunday session will be devoted to microtechniques.

Twenty-six members attended the short course on aeronautical documentation held in January and, in spite of widely varying background experience, all agreed in general discussion at the end of the course that it had served a useful purpose. In view of the increasing demand for trained library staff it is thought that the course might usefully be repeated, with slight variations, another year.

New Japanese Information Centre

The Japanese Government has announced the formation of The Japan Information Center of Science and Technology, which will collect Japanese and foreign periodicals in science and technology and prepare abstracts and indexes. The Center will also provide a photocopying service and English translating service, available to individuals and organizations outside Japan, and will be responsible for encouraging co-operation with overseas organizations in the field of documentation. The address is: The Japan Information Center of Science and Technology, C.P.O. Box 1478, Tokyo, Japan.

Science Museum Library Guide

The *Short readers' guide* recently produced by the Science Museum Library is a four-page leaflet intended to help readers to the fullest use of the library's facilities. It outlines the aims and resources of the library, including special collections, gives advice on how to find material through use of the catalogues and indexes, and describes the reading room facilities and lending and photocopying services. The guide is available free of charge from the Science Museum Library, South Kensington, London, S.W.7.

Index to Theses; volume 5

The fifth volume of *Index to theses accepted for higher degrees in the universities of Great Britain and Ireland* is now ready and in course of distribution to those who have placed standing orders. It covers the academic year 1954–55 and records 2,754 theses and dissertations, classified under subject headings and indexed alphabetically by authors' names. A table at the beginning of the volume shows the conditions under which copies of theses can be made available for consultation or copying. The editor is again Magda Whitrow, B.A., A.L.A. Copies of all volumes are available from Aslib, price 21*s*. to members, 25*s*. to non-members. It is hoped that volume 6 of the *Index* will be ready within the next six months.

ASLIB INFORMATION

Aslib Book-List; volume 23

The *Book-List* has a new look for 1958. The cover has been redesigned and now includes a bibliographical strip as recommended for all periodical publications by the British Standards Institution. The typographical arrangement of the list has been simplified and the entry numbers placed in a more prominent position. The object of these amendments is to make the *Book-List* more readable and quicker and easier to use as a reference work.

British Union-Catalogue of Current Periodicals

The Nuffield Foundation has generously made a grant of £8,250 over a period of three years for the compilation of a *British Union-catalogue of current periodicals*. This volume, which will be a continuation of Bucop, will include all periodicals new since around 1950 as well as material additional to the four volumes already published. There has been great activity since 1950 in the publication of periodicals in this country and abroad especially in the scientific and technical fields, and in the acquisition of such material by British libraries. The new catalogue will make this material available for research and information.

When the *British Union-catalogue of current periodicals* has been completed the work of Bucop will be taken over as part of the normal activities of the National Central Library.

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TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.Sc.(Engin.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

CALCUTTA UNIV. CENTRAL LIBRARY

ASLIB PROCEEDINGS

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Volume 10 March 1958 Number 3

THE INDUSTRIAL DEVELOPMENT OF THE CHESTER AREA

BY J. G. McPEAKE, F.L.A.

City Librarian of Chester

Aslib Northern Branch Conference, Chester, 24th October 1957

THE city of Chester has a long and noble history; its beginning is known only in legend, but it is certain that the Romans built a fortified camp here about the year A.D. 60. From then until today Chester has known extremes of prosperity and poverty, extremes of glory and vicissitude. Its tremendous importance for three hundred years as a Roman legionary fortress was followed by centuries of desolation. In late Saxon and Norman times the city was resettled and rebuilt, and became once more a place of great importance. It was the seat of the Earls of Chester, who had parliaments of their own and had almost sovereign jurisdiction over the area. The site factors which had contributed towards the growth of a military centre also helped its commercial growth: it occupied a sandstone bluff in a bend of the River Dee which was easily defensible, it controlled the route from the English Midlands to the Irish Sea and to Ireland, and it stood at the last easily bridgeable place on a navigable river. It was a small town, but there were no large towns anywhere near, and after the Conquest it rapidly became a regional centre, the seat of government of the county palatine, the seat of a great abbey and a thriving port. The prosperity of the city depended largely on the port, through which there was a flourishing trade with Gascony, Ireland and other British ports. Then followed a decline in the city's fortunes; the growth of a strong central government, the comparative success of Edward I's pacification of the Welsh, which eventually reduced Chester's military importance, and above all the silting-up of the River Dee all played their part. By the end of the fourteenth century Chester's importance as a seaport had gone for ever; by mid-fifteenth century sea-going ships could not come within twelve miles of the city. The city authorities were very much aware of the problem and there was no lack of schemes and suggestions to improve the navigability of the river. In the meantime the port functioned, though sadly declined, and the larger ships loaded and unloaded farther downstream. The rise of the much younger port of Liverpool is not unconnected with Chester's misfortune. In the Civil War

Chester stood staunchly behind Charles I and suffered grievously for its loyalty. Following the defeat of the king's army at Rowton Moor (two miles south of here), which Charles is supposed to have watched from the Phoenix Tower, the city was beseiged for twenty weeks. It surrendered only when famine and disease made further struggle impossible. The city plate was melted down, the corporation funds were exhausted and its lands mortgaged. The suburbs were a scene of desolation and many buildings inside the city were destroyed. The material damage to the city was estimated at £200,000 at least. Shortly afterwards the plague returned once more and it is said that upwards of 2,000 died of it; the city was so deserted that grass grew in the streets at the High Cross.

Recovery was slow, but by the middle of the eighteenth century the city was fairly prosperous again and a provincial centre of fashion. It was touched by national events but played no large part in them. It was spared the worst excesses of the Industrial Revolution and by the same token retained, along with its architectural treasures, a conservatism and lack of desire to change. A new channel was cut for the River Dee in 1733, and although this allowed vessels of 300 tons to reach the city it was not financially successful and did little to retrieve the vanished fortune of the port. The Chester and Nantwich Canal came here in the 1770's, the railway in 1840.

Chester had always been an important road centre and the improvement of roads during the nineteenth century, together with the general growing prosperity of the country at large, helped the steady growth of the city's importance as a shopping, commercial and tourist centre.

This necessarily sketchy account of our history is not even the bare bones of the story. It has ignored the richness of incident and personality, the pageant of royal visit, the excitement of great building, the frequent clash of arms, the comedy and courage of civic life over nearly 2,000 years. I hope that it will serve as a background to the industrial development of the Chester district, which is my task.

In medieval times Chester had, like any other English town of the period, its share of trades and manufactures. The titles of the city companies are themselves pointers to activities of the time:

Tanners,
Brewers,
Cappers, pinners, wiredrawers,
Smiths, cutlers, pewterers,
Glovers,
Fletchers, bowyers, coopers and stringers,
Felt makers and skinners,
Weavers, etc.

Many of them are of great interest and are worthy of separate study. I shall have time to mention briefly only one or two.

Even before the Norman Conquest Chester had a thriving skin and fur trade. The skins of martens, lambs and kids were imported, many of them from Leghorn and other parts of Italy. They were dressed here and made into gloves and other articles of wear. The glove industry persisted until the nineteenth century; in 1810, when its importance was gone, two hundred people were still employed in making gloves. The dressing of sheep and calf skins and the tanning of leather were the staple industry. The area of large factories and warehouses on the riverside was known as Skinner's Street. Apart from tanning this industry had died away by the middle of the nineteenth century.

Shipbuilding was carried on in Chester for many centuries. The yards were on the river banks near the Roodee, where the gasworks now stand, and farther downstream in the area called the Crane. Even as late as 1810 Lysons's *Magna Britannia* says that more ships were built in Chester than in Liverpool. During the Napoleonic Wars several twenty-four-gun warships were built, and merchant ships up to 500 tons. The barque *Gitana*, of 1,367 tons, was built in Chester in 1861.

The ancillary trades of sailmaking (continued today by a firm in Crane Street who have moved with the times and now make tents and marquees), rope-making, chain and anchor making were carried on until the nineteenth century. Messrs. Henry Wood & Co. still make chains and anchors at Saltney.

The shipbuilding trade declined during the nineteenth century, though it is only in recent years that Crichtons of Saltney ceased to build ferry boats, river craft and tugs.

In 1698 a paper mill was established on the Causeway on the Handbridge side of the river, at the end of what became Paper Mill Lane and is now Mill Street. In 1745 there were three paper mills in that area. The trade was transferred, towards the end of the eighteenth century, to the city side of the river, adjoining the famous Old Dee Mills. The making of paper appears to have died out before 1850.

A Chester industry from the early seventeenth century was clay-pipe making and large quantities were exported in the seventeenth and eighteenth centuries. Dr. Charles Leigh said in the year 1700 that 'they are esteemed the best in England and, if I mistake not, the best in Europe'. A special short pipe, called the hog-pipe, was made for the Guinea trade. The clays came from Devonshire, Dorset and the Isle of Wight. The port book of Bideford in 1691 records exports of Devonshire clay to Chester. The pipes were made in the Love Lane area, and there were still seven makers listed, mostly in that area, in 1850.

As might be expected from the foregoing, Chester has also been a centre of tobacco manufacture. In the seventeenth century tobacco cutters and makers were established on the south side of the river near Dee Bridge. Tobacco and snuff were made there, in later years by the firm of G. Nichols & Co., until 1954.

It is a sad fact that at the end of this month* the tobacco factory of W. T. Davies & Sons, in Canal Street, Chester, will close down after nearly a century of activity, and about 160 people will be displaced. The firm was founded in 1860 and it later absorbed the business of Williams & Co., who were established in Crane Street in the eighteenth century. Davies's, who were a branch of the Imperial Tobacco Company, merged into W. & F. Faulkner in 1952. The Chester brands, which have been mostly pipe tobacco in recent years, will be made in Faulkner's factories elsewhere, so 'Coral Flake', 'Tom Long', 'Sweet Briar', 'Nosegay' and the popular Welsh shags 'Y Brython' and 'Baco'r Bryniau' will not be lost to pipe smokers.

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* October 1957.

The story of decline is now over. The rest of my paper will deal with the vigorous growth and expansion of industrial firms in and about Chester who are still with us.

LEAD WORKS

The oldest firm in Chester to survive and grow into a modern firm on its original site is the Chester Lead Works. It was started in the year 1800 by Samuel Walker, the head of a well-known firm of iron-founders who had been active in Rotherham and Sheffield since about 1740. The building of the Chester works, on the canal bank in the Boughton area, occurred at a period of general activity in the lead industry which was due partly to the Industrial Revolution and more particularly to the Napoleonic Wars. Works at Newcastle upon Tyne and Lambeth were also opened at that time.

The Chester works was first intended to manufacture white lead and red lead for paints, the paints themselves, and lead shot. The shot tower was built in 1800 and is still in use. It is 160 feet high and a notable landmark in the district. I believe that there are only three still in use in this country. It is interesting to note that in the early nineteenth century Chester had two shot towers: there was a smaller one in Commonhall Street, which has since been demolished.

By 1812 a rolling mill and machines for drawing lead pipes were also installed and working. Hemingway, in his *History of the City of Chester*, in 1831, describes the works as 'extensive and employing a large number of hands'.

The site was chosen as a convenient one for the manufacture of lead products from the ores mined, smelted and refined in north Wales. Pig-lead from north Wales and Spain was brought into the works from the Dee by the adjacent Nantwich Canal, and finished products were dispatched to the Midlands and north-west by the same means. In 1834 the firm, then called Walkers, Parker & Co., acquired its own smelting works in Bagillt.

Lead smelting in Britain suffered a severe setback in the 1880's when the very large lead ore deposits in Canada and Australia began to be mined much more economically than the smaller British deposits could ever be. Apart from a temporary revival in both world wars, our 'virgin' lead industry has dwindled to a small fraction of the world's output, and our smelting industry is now engaged in the recovery of lead from scrap materials. Smelting has ceased in north Wales and in the last thirty years lead smelting in the north-west has been concentrated on Chester, which has proved an excellent collecting centre.

The present activities of the firm are first, smelting and refining and second, the manufacture of finished products. Some of the pig-lead produced is sold to the makers of batteries, cables and the like, but most is passed to the various manufacturing departments of the Chester works. The other main products are:

Read lead and yellow litharge, which is sold mainly to battery manufacturers and glass makers.
Genuine red lead paint.
'Magnet' brand high-gloss paints.
Lead bisilicate for making lead glazes.
Leadless frits for use in glaze making.
A wide variety of lead sheet, lead pipes and other fabricated leadware,

largely for the chemical industry; very thin sheet lead for tea chests, etc.; lead flashings for damp-courses and roofs. Many large items have been made for the Atomic Energy Authority, and the firm has specialized in the manufacture of interlocking lead bricks to build protective screens in atomic research laboratories.

The Lead Works is now part of Associated Lead Manufacturers Ltd., and about three hundred and fifty people, apart from sales and buying staff, are employed.

HYDRAULIC ENGINEERING

Another firm which had its beginnings in the early nineteenth century and is still going strong is the Hydraulic Engineering Company of Chester and London, which was incorporated in 1874. An engineering works on the present Charles Street site was begun by Messrs. Cole, Whittle & Co. in 1803 and in its early years it had one of several foundries existing in Chester at that time. In the heyday of hydraulic engineering the Hydraulic, as it is locally known, made and exported lifts, cranes, coal-wagon hoists and dock-gate machinery to Gibraltar, Hong Kong, South America and Africa.

Between two hundred and two hundred and fifty people are now employed in the works and they include a respectable number of middle-aged and older men who have spent all their lives in the firm, and sons of fathers who work there. This is a feature of several Chester works which is mentioned with very proper pride by their managements.

The Hydraulic's present output is mostly fine-quality high-pressure pumps and hydraulic presses, incorporated in machinery specially designed for customers' requirements. These include rubber die forming presses of various types and presses for plastic moulding, cable sheathing, die stamping, shell making; bar straighteners, pipe-bending machines; cotton baling and brick presses. A fair proportion of the works' products is exported, and an interesting recent export to Poland was a batch of twelve presses for the rapid production of gramophone records.

Another of the firm's special products is the Mangnall earth borer, designed by the present managing director. This machine, operated by a portable pump, makes line and pipe laying possible without excavation, a kind of mechanical mole that would appear to have immense possibilities.

STEEL

The steel industry is one of the most satisfyingly successful aspects of our post-war industrial life. The ever-increasing efficiency of our plants, which is outstanding even by American and German standards, and the good labour relations which exist throughout the industry have resulted in a steady increase of output year by year in spite of the shuttlecock of nationalization and denationalization. It is therefore especially pleasing to be able to include a steel concern in this survey.

The works of John Summers & Sons at Shotton is situated on Dee Side about six miles below Chester. Though outside the city, a good proportion of its 10,000 employees live in Chester, and its effect on local life is such that a paper like this would not be complete without it.

The firm had its origin on the opposite side of Cheshire at Dukinfield where, in 1842, a young man named John Summers started a shop where he made and sold clogs for the cotton workers. He was an enterprising and ambitious young man who even then showed the energy and the wish to be independent of others which characterize the firm today. In 1851 he went to the Great Exhibition in London and bought for £40 a machine for making clog nails. Next he bought an old engineering works in Stalybridge and put down a mill to make crude steel sheets with which to feed his nail-making machine. This was probably one of the first sheet-rolling machines in the country and marked the beginning of the manufacture of steel sheets by the Summers family. Long before John Summers died in 1876, at the early age of 54, steel rolling had replaced clog making. The business was carried on by three of his sons, but not much more progress was made until a fourth son, Henry Summers, joined the firm in 1889.

Henry Summers, a man of outstanding ability and energy, took the lead at once. Soon the firm was rolling its steel sheets from sheet bars imported from America and the Continent. The rapid expansion which now took place caused Henry Summers to search for a new site, and in his wisdom he selected a large marsh area on the north bank of the River Dee for which, it is said, he paid £5 an acre. By 1896 a start had been made at Shotton with one steam engine, driving eight mills. By 1900 there were thirty mills, together with galvanizing pots, annealing furnaces and other finishing plant there.

The firm's dependence on imported steel galled Henry Summers until in 1902 he laid down what is now No. 1 Steelworks. In 1906, to continue the policy of being self-supporting as far as possible, a foundry was started, to produce rolls, brasses and castings of which the firm were such large users. The headquarters of the firm moved to Shotton in 1908. Difficulty in obtaining furnace lining materials in the first world war led to the acquisition of the Castle Fire Brick Company at Buckley. Under its new control the production of bricks was raised from 40,000 to 1,000,000 bricks a week. The firm was still dependent on outside sources for coal and pig-iron, so the next step was to purchase the Shelton Iron, Steel & Coal Company at Stoke-on-Trent. This company owned a number of coal mines and produced a surplus of pig-iron.

Henry Summers and his fellow directors were aware that America, with its enormous domestic demand for sheet steel, had resources for research and development not available to steel makers in this country. And so regular trips across the Atlantic were made and the all-important 'know-how' was assimilated.

The most important outcome of these American visits was the installation at Shotton of a continuous hot and cold strip mill by an American firm in 1939.

To take advantage of the great productive capacity of the continuous strip mill improvements in coking, iron making and steel plants were necessary, as well as in the various finishing processes. The war delayed the completion of plans made as far back as 1937, but the last few years have seen the company in full stride once more. Reclamation of the Dee Marshes, itself a massive achievement, now amounts to about 900 acres, of which 530 are in use. Further development of some 2,000 acres to seaward is possible and work is still in progress.

The new plants—coke ovens, blast furnaces and open-hearth steel furnaces—are large separate concerns in their own right, but the whole is integrated into a smooth, continuous operation of breath-taking magnitude. Manual operation in all the processes has been reduced to a minimum; the old-type steel men are still there, and they look as tough and aristocratic as ever, but much of their activity seems to be a cool watching, a quick, efficient operation when the time is ripe, and a relapse into nonchalant observation. Moving belts, rollers and cranes move great masses of raw material, red-hot metal and finished steel sheet with little apparent interference from the operative. It is impossible not to be stirred by the drama of iron and steel making. Those of you who are concerned with steel firms or who have watched the operations will know what I mean; spectacles of great beauty and splendour (and danger too) are to be seen at many stages. Probably the most impressive scene is the truly golden stream of molten metal running away when the blast furnaces are tapped; but the thundering power of the slab mill as it tosses twelve-ton ingots of red-hot steel to and fro until it has squashed them to the right shape, and the swift poetry of a 1,200 feet long strip of red-hot sheet snaking over the rollers at twenty miles an hour are not without their moments. There is surely no peacetime pursuit with such dynamic qualities.

The original John Summers must look down with great satisfaction on this twentieth-century industry producing, apart from its by-products, about a million tons of the finest quality sheet steel every year for use in commodities as diverse as motor cars, cookers, refrigerators, oil drums, office furniture, railway carriages, ships, petrol pumps and bombs.

SWITCHGEAR

Henry Summers chose Shotton because land was cheap, water plentiful and limitless development possible; John Hirst, co-founder of Brookhirst Switchgear, came from Manchester to set up business here because, in his own words, he thought Chester 'a more reasonable place to live in', offering more gentle and pleasing conditions of living to his workers.

Hirst, an apprentice in the Manchester firm of Mather & Platt, decided to set up his own firm to make switchgear that was safe and dependable. He advertised for a partner and an apprentice in a Midlands power station, Percy Brook, answered. So, in 1899, began the firm of Brookhirst in Victoria Road, Chester, with twelve employees. Hirst was evidently a brilliant designer as well as a shrewd business man and a good employer. He and his partner, in the first year or two, made electric arc and other lighting equipment, which they pushed in a barrow to Congregational halls, hotels, etc., and fitted themselves. Soon they were making enough money to begin manufacturing their first d.c. starters.

These were pioneering days in the electrical industry, and Hirst's switchgear, in which for the first time all the component parts were brought together (starter, switch, fuse box, etc.) in a well-designed unit, were in great demand. Hirst was constantly engaged in alteration and improvement of control gear for the electric motors which were being used in increasing numbers in industry, and he was usually ahead of his time. The firm outgrew the original premises in George Street and Victoria Road, and in 1908 a start was made on the present works in Newry Park, a mile away, but still called Northgate Works.

Starter and control gear for ships' engine rooms were among Brookhirst's early products. Since then, Brookhirst engineers have studied the needs of control for machine tools, power stations, gas works, material handling, chemical and food processing, electrical furnaces, heating and ventilating and many other markets, at home and abroad. 'Starters' have now become 'motor control gear', the thinking part of the complicated automatic processes now obtaining in almost all industry.

Some of the notable contracts in recent years include: control equipment for the heating and air-conditioning plant in the new House of Commons, control gear for the Calder Hall Power Station, and a large amount of the equipment at the atomic energy establishments of Harwell, Capenhurst and Windscale; equipment for power stations throughout this country, and in Australia, India, Pakistan, Malaya, Argentina, South Africa, etc.; control equipment for the new oil dock at Eastham on the Manchester Ship Canal; steering and other control gear on the *Empress of Britain*, the Royal yacht, the *Queen Elizabeth*, the *Queen Mary* and many other liners.

In 1954 a sister factory was opened at Bromborough, Wirral, and the firm has now in hand orders worth £1¾ million. Brookhirst's good reputation has been built up by their ability to move with or ahead of the times, and the extra quality of their products. These two qualities are being preserved by extensive research laboratories now established in Chester and by the very fine apprenticeship scheme which ensures a steady supply of good craftsmen. The firm is now backed by the larger financial resources of Metal Industries Ltd., so that the necessary development and expansion will not be denied to it. It can now claim to be one of the world's leading manufacturers of motor control gear and is well placed to supply equipment for which there is an ever-increasing demand.

METAL WINDOWS

Brookhirst's next-door neighbour is the metal-window factory of Williams & Williams, the Reliance Works. The founder, Mr. Benjamin Allen Williams, left the family firm of Williams & Gamon, also manufacturers of metal windows, in 1909 at the age of 21. By dint of hard work and a driving energy unusual even among the captains of industry, he has built up what is now a world-wide organization. The headquarters factory and offices in Liverpool Road cover seventeen acres. There are seven other factories in Great Britain, ten factories and six warehouses abroad, in Belgium, the Belgian Congo, South Africa, the United States, Canada, Manila and South America. Today Williams & Williams are the largest exporters in the world of metal windows and ancillary products such as architectural metal work, 'Aluminex' windows, doors, partitions, etc. The company has about 7,000 employees in all, 1,300 of them in Chester.

Steel windows are rust-proofed by any of three methods: hot-dip galvanizing, electric galvanizing and zinc spray. The firm has pioneered aluminium curtain walling under the trade name of 'Wallspan'. This is used in steel and concrete buildings and has great advantages of speed and economy in erection, permits of great variety of architectural treatment and requires virtually no maintenance. It has been used in factories, schools and office blocks, including the new Commonwealth Building in Ottawa, British Columbia Electric Administration Building, Victoria, B.C., the State Government Insurance Office Building in Perth, Western Australia, and so on.

Other interesting contracts were: the Brabazon hangar (which is 1,000 feet long), the new American Embassies in Madrid, Paris, Brussels, Copenhagen and Stockholm. The windows in the Rockefeller Centre, the Waldorf Astoria, New York, Sun Life, Montreal, and naval bases at Naden and Shearwater were made in Chester. Many of the men in key positions in the factories in other parts of this country and overseas were trained in the Chester works, and there is still a strong family flavour about the business.

Apart from the Reliance Works, Chester has two other metal window factories, both having connections with Williams & Williams but completely independent of them. The first is the Kaleyards Works of Williams & Gamon, the firm of Mr. Benjamin Williams' forebears from which he broke away in 1909 to form his own company. The second is Rustproof Metal Windows Ltd., of Saltney. This firm was formed by a member of the Williams family and is now a friendly competitor, employing more than 500 people.

In discussing this very local industry of metal window making, it is interesting to recall that one of the other three big names in metal windows in this country, Crittall, is also connected with Chester. The founder of Crittalls was once apprenticed to an ironmonger in Chester.

PRECISION GROUND RODS

The Victoria Road area of Chester seems to have been a most successful nursery for Chester industries. A third firm which began there and was forced by subsequent expansion to move was Pratt, Levick & Company Ltd., which was formed by Messrs. Pratt and Baskerville in 1918 to make precision-ground steel and non-ferrous cylindrical rods and bars. By the next year, 1919, they had outgrown their premises in Victoria Road and moved to their present factory beside the ancient Water Tower. This factory has itself been greatly extended since. This is an admirable firm, compact and efficient and using people and machines in excellent harmony. They are quite confident that their precision-ground stock is the best obtainable. They buy from steel and non-ferrous producers the best quality bars, which they straighten and grind to very fine limits of accuracy and high finish. The product is sold to makers of machine tools, printing, cigarette-making and hosiery machinery, meters and instruments, radio, television and radar equipment, typewriters, etc.

Pratt Levick's have the most harmonious of relations with their workpeople. They have in operation incentives in the form of production bonuses of wages and holidays, based on the works output and not the individual. This has resulted in a team spirit which is above the ordinary.

AIRCRAFT

A large and important employer of Chester labour is the De Havilland aircraft factory, situated at Broughton, four miles from the city on the Flintshire side.

The factory and its adjoining airfield were built in the late 1930's by the Ministry of Supply as part of the plan for dispersed production for the war that was expected. It was well designed for large-scale aircraft production, and when completed it boasted a larger floor area than any other aircraft factory in Europe. The plant was first leased to Vickers Armstrongs, who were then preparing for the large-scale production of the Wellington bomber, and during the war years the Chester factory produced Wellingtons, and later Lancasters, in very large numbers. After the war Vickers produced prefabricated houses there until 1948, when De Havilland took over the factory.

The first job was to be the end phase of Mosquito and Hornet aircraft production, and in fact while Vickers were finishing off their prefabs in one end of the assembly shop, De Havillands started building Mosquitoes at the other. The first Mosquito flew in October 1948, by which time the Vampire, for which De Havillands had taken over the factory, was also in production. As you know, there was a ready sale overseas for this excellent aircraft, especially in the Dominions, Sweden and Switzerland.

In 1950 the Chipmunk was introduced into the production line and in that year 367 aircraft, including 151 Vampires, were built. Since then Doves, Herons, Venoms, Sea Venoms and Comets have been manufactured in Chester. The first Comet 2 was nearly completed when production was suspended in 1954. At present work on Venoms, Sea Venoms and Vampire Trainers is being reduced, and the floor space made available for the Comet 4 and the D.H. 110. The first of the new Comets is due to fly in the early summer of 1958 and the first D.H. 110 soon afterwards. In addition the Dove and the Heron in their various forms are being extensively produced.

Up to the end of 1956 the Broughton factory had produced 3,400 aircraft. Of these, 1,370 (over 40 per cent.) were for overseas customers. The value of these exports is put at about £33 million. The production figures probably exceed those of any other aircraft factory outside the U.S.A.

One of the difficulties which De Havillands have faced at Broughton is the shortage of skilled labour. The building of the vastly more complicated aircraft now being undertaken needs far more man-hours than did the building of their predecessors, and, in spite of energetic training schemes, the shortage of skilled labour remains a problem.

SALTNEY

Those of you who visit the De Havilland factory or the St. Deiniol's Library tomorrow afternoon will, on leaving the Chester city boundary, pass through the industrial area of Saltney, which I have referred to once or twice. This area stretches along the south bank of the River Dee and, although it is in Wales, is part of greater Chester, and its industries draw many of their workers from Chester.

This is an old-established industrial area which has plenty of flat land suitable for development and is accessible by road and rail. Until recent years it was also accessible by water. Formerly the industries were fairly heavy and some of these survive. I have already mentioned the Rustproof Metal Window Company and Henry Wood's Chain & Anchor Company. Other firms include Webb's fertilizer factory, Montgomery Stobo's paint works and British Bitumen Emulsions, and a large railway wagon works.

New industries in the area include the No Nail Box Company and the Allied Bakeries Country Maid Bakery. No Nail were bombed out of their Bootle premises in 1941 and moved in that year to derelict premises formerly occupied by the old Dee Oil Company. During the war years No Nail were unable completely to repair the damage sustained in the bombing, but since restrictions have been removed they have substantially rebuilt and extended the original premises and have re-equipped with new machinery. They specialize, as one might guess, in the manufacture of no-nail packaging materials made from fibre-board, timber and plywood of various thicknesses. They have also an extensive saw milling plant.

The No Nail cases are made to customers' requirements and are supplied to makers of motor engines, oil, electrical equipment, whiskey, tools, radio and so on. Three hundred people are employed, mostly from Chester.

Before leaving the western side of the area one should mention the most recent industry of all. This is the Queensferry board mill, built by the Chester timber firm of J. R. Gordon & Company Ltd. This was opened a month ago and cost £500,000 to build. It is described as the 'first fully integrated forest utilization industry in the country', and is claimed to be the most up to date of its kind in the world.

It is estimated that the factory will increase the home production of insulation board by 25 per cent. The raw materials are sawmill waste and hitherto unusable forest thinnings, and the weekly output is about 180 tons. The factory works day and night and, apart from labour engaged in the preparation of raw material, is largely automatic. Fewer than a dozen of the fifty-two men employed work in the actual board making.

SEALAND

The Corporation have reserved a thirty-four acre site for industry in the Sealand Road estate, an area of land reclaimed when the River Dee was canalized. This is on the right bank, on the opposite side to Saltney, below the city. This area is available for new works and, it is hoped, for the eventual transfer of factories which are out of place in the city. Some sites have already been occupied, notably one by the headquarters of the clothing firm of Tilly & Henderson. This firm has factories in Londonderry, Donegal, Leigh (Lancs), Colwyn Bay, Rhyl and Chester. They make pyjamas, shirts and ladies' blouses and supply firms like Marks & Spencers. The Sealand headquarters houses the design, research, special cutting and embroidery sections, as well as the head office. The Water Tower Street branch, known as Woodburne (Chester) Ltd., manufactures ladies' blouses. It is the second clothing factory in the city; Bradley's, the multiple firm, have their headquarters in City Road near the General Station, where 120 people are employed in making clothes for their 158 shops. Bradley's also have factories in Tamworth and Liverpool.

In Sealand Road, though not on the new estate, is one of Chester's more exotic factories: the Arthol Scent Works. This is hard by the sewage works, though whether it was sited there by accident or design I do not know.

This firm has since 1922 been blending and making perfumery materials which are sent all over Britain to perfume, soap and cosmetic manufacturers. The research and development laboratory of the factory is constantly at work on the distillation and blending of the thousands of raw materials of perfumery, and when satisfactory results are obtained the processes are repeated in the factory.

The aromatic essences used have wildly romantic origins:

Clove oil for eugenol (the base of carnation perfume) comes from Madagascar, Zanzibar and Sumatra;
Costus oil from a root grown in Kashmir;
Lemongrass oil from south India;
Tonka beans from Venezuela and zdravets oil from the Balkan uplands;
Attar of rose from Bulgaria and ylang ylang from Reunion and Manila;
Ambergris from whales, and musk from the male musk deer of the Atlas and Himalayan Mountains;
Civet from the civet cat of Abyssinia is used as a fixative, and I am not surprised.

It is perhaps unfortunate that, because of their very high cost, natural products are being replaced at an ever-increasing rate by synthetic reproductions. However, apart from their comparatively low cost, synthetic bodies have the advantage of laboratory control and are not subject to the vagaries of the elements, which are the constant worry of the producers of natural oils.

The company have specialized for thirty years in the manufacture of ionone, or synthetic violet oil, the basis of many modern French perfumes.

CAPENHURST

The Atomic Energy Authority, in choosing a site for a uranium 235 factory, looked for the following: a large, flat area to house extensive process buildings, a lot of water for cooling purposes, a site that had already been developed (to save the cost of building roads, railways and ancillary buildings), a plentiful electricity supply to drive compressors and a considerable amount of labour for construction and for operation. These were all found near the village of Capenhurst, on the Wirral peninsula between Chester and Birkenhead, and not too far from the River Dee. The site had been a Government depot for small-arms inspection. A further large area for the process plant was acquired, and work began on the site in 1950.

The factory is now completed and employs between 2,000 and 3,000 people, mostly men. About one-fifth come from Chester, the remainder from the Wirral and Merseyside. It is almost the ideal factory: spotless, because cleanliness is essential to the correct functioning of the process; quiet, with an almost cathedral-like hush. Its business is the separation of the 235 isotope of uranium by the gaseous diffusion process.

The heavy demand for electricity on the N.W. Electricity Board has now been cared for by the erection of a new £13 million power station at Ince, built largely for this purpose and opened last week.

This is a fitting point, in both time and development, to break off.

CONCLUSION

To sum up: Although Chester had its expected medieval industries, and during the seventeenth and eighteenth centuries a number of peculiarly local ones such as pipe making and glove making, none of these has been carried on into our time. The Industrial Revolution touched Chester lightly, and only the Leadworks and the Hydraulic survive from the first half of the nineteenth century. In the few years before and after 1900 a number of light metal industries were begun, together with Brookhirst switchgear and Summers's steel works at Shotton. Swiftly as these all expanded, Chester and district could not be called an industrial area even in the early 1930's. The late 1930's, the war years and since have been periods of tremendous development; the smaller firms have grown and played their part in the export drive, and the large ones have grown into giants, joined by the atomic factory at Capenhurst. The building of new factories at Sealand and on the Flintshire side shows that industrialists think that Chester has still scope for development. The Ellesmere Port area is outside my scope, but undoubtedly the great developments there in oil, carbon black, paper and other industries have had a marked effect on the city of Chester, particularly on business prosperity, the labour market, housing and transport.

We have seen that industry established itself outside the medieval walls in a belt from Broughton in the east, across the north of the city to Sealand and the River Dee in the west, with considerable development at Saltney and farther down river. The river and canal formerly influenced siting for reasons of transport; the river now attracts industries using water in large quantities. Other reasons for selecting sites have included the personal whims of industrialists who wanted a pleasant environment for themselves and their workers, flat, suitable sites (particularly on reclaimed river land) and because of Chester's strategic position between industrial south Lancashire and the Midlands.

To forecast Chester's industrial future in these swiftly changing times would be to indulge in guesswork, but the variety of local industries, their vitality and ability to keep up with the times make one hopeful. It does not seem likely that any more large industries can be built in or close to the city, though there is room for more light industry at Sealand and Saltney. In any event Chester, with its economy founded on the soundly balanced triangle of commerce, the tourist trade and lively industry, can surely look forward with confidence to a continuation of its past greatness.

DISCUSSION

Mr. Cameron (A. V. Roe & Co.) congratulated Mr. McPeake on a very erudite paper and said that he was sure that not many people could give a similar bird's-eye view of the industry in the area. He was fascinated by the story of the metal industry, including the Chester lead industry, the dramatic atmosphere of Capenhurst and the terrifying greatness of the activities of the Summers steel works. Another interesting feature was the reclamation of land. Chester was singularly fortunate in having so much undeveloped land which would stand Chester in good stead for years to come. He was surprised at the variety of the industry in Chester. He did not want to inhibit members of the audience from asking questions but he would like to know a little more of the methods of land reclamation adopted.

Mr. J. G. McPeake (City Librarian, Chester) said that the largest reclamation scheme was that by Summers, using suction pipes floating on pontoons which sucked up sand from the river bed, this sand being pushed flat by bulldozers. There was some land being reclaimed nearer the city. One of the causes of the decline of Chester in the Middle Ages was said to be the silting of the river; he did not think that there was any connection between the dredging of the Mersey and the silting of the Dee. The Corporation had many reclamation schemes. In 1733 a scheme had been set in motion to cut a channel to take ships of 300 tons into the city, but the company failed and the channel fell into disuse. A result of the scheme had been, however, that new land had been made available in the Sealand area. It is proposed to erect a bridge from Heswall across the Dee and this will result in an area of reclamation even greater than that of Summers.

MR. F. NEWBY (Hardman & Holden Ltd.) suggested that if St. Peter's Church, built in 907, were taken down for road widening, this would be a greater calamity than for Capenhurst never to have existed. In all this development industry will find Chester to be one big bottleneck, and Chester has the responsibility to see that the ancient city, including the cathedral, continues for all time.

The Mayor (Councillor the REV. E. J. LAWSON) explained that there is no intention of interfering with the Roman city area. The preservation of our architectural inheritance is a matter of very great concern and is one of the factors which brings so many people to Chester. Our problem is to combine these facts with the desire to provide roads for people coming into Chester or passing through it. In order to keep the traffic flowing we have to use one-way streets. Our salvation lies in two directions: the completion of the outer ring road which now runs from Christleton to the Mostyn hospital, and the development of an inner ring road which would allow traffic to go north and south without going to the Cross.

MR. J. L. IRELAND (Peter Spence & Sons Ltd.) asked, as a person brought up in this area, why Mr. McPeake had not mentioned the Crosville Motor Services.

MR. MCPEAKE replied that he had had to draw the line somewhere and had confined his remarks to the manufacturing industries. He had also omitted the railway industries employing several thousand people.

MR. LINSTEAD (Edgar Allen & Co.) understood that Chester had the first assay office, possibly even before London and Birmingham. Could Mr. McPeake explain this? Was there an industry requiring an assay office here?

MR. MCPEAKE said that Chester was a good centre but he could see no special reason why there should be an assay office at the present time. Chester had a mint here in Saxon times.

The Mayor said that Chester was originally a palatinate and probably the mint continued in the same way as at Shrewsbury. He referred to the outstanding skill of the Chester gold and silver smiths which could be recognized in the cups, etc., displayed during the race week.

INFORMATION IN OIL

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THE PETROLEUM INDUSTRY

IN less than one hundred years the oil industry has grown from nothing to become one of the most important in the world. In 1850 the total world petroleum production was nil. In 1900 it was about 20 million tons and in 1955 it was almost 800 million tons. In 1900 the world had 20,000 motor vehicles, in 1955 there were 95 million.

In the early days the only products were gasoline, kerosine, and fuel oil, but now the products form a wide range which is constantly extending so that the industry has become very complex. Oil production and manufacturing are now being carried on in more than sixty countries, and the products are marketed in all parts of the world. This international trade is of great importance and oil has become the largest single commodity carried between countries.

Crude oil is an inflammable liquid consisting essentially of many hydrocarbons of different types and associated compounds. Crude oils from different sources have widely different properties. Each refinery will, as far as possible, use the types of crude most suitable for the range of products which it must provide, but it will also have to make the crudes available serve its purpose, by adopting the appropriate technical methods. Refining operations are therefore extremely flexible and are constantly being developed to meet the changing nature of crudes and products. The cracking process is a good example of this adaptation to new circumstances. When the demand for gasoline began to increase, methods had to be found to provide it without leaving great stocks of residual fuel oil for which there was then no large demand. Thermal cracking was first devised and developed in the twenties but catalytic cracking has now taken its place, giving increased yields of better quality gasolines as well as gases for chemical production. Other new processes and improvements are constantly being developed to give higher quality products or a greater proportion of one type of product from a given crude.

Before the war the usual practice was to place refineries near crude-producing centres and to ship the refined products to the consuming areas. Since the war the trend has been to build refineries to produce products to satisfy local markets, and to import the crude, and much of the large expansion of post-war years has been on these lines.

Owing to its nature, oil requires special arrangements for its transport in tankers, pipelines, and road or rail vehicles which have to bear the disadvantages of lack of alternative uses and empty return journeys. Its storage presents greater problems than that of most other commodities. Evaporation of volatile products must be avoided, viscous fuel oils and bitumen must be heated to facilitate pumping, and the safety precautions have to be elaborate. Oil has to be carried in large quantities over the long distances which separate the producing and consuming areas. The main means of bulk transportation are tanker fleets, and pipelines when they are suitable. The tanker fleets now form over one-quarter of the world's total merchant tonnage.

The manufacture of chemicals from petroleum is a relatively new but rapidly expanding side of the established oil and chemical industries. During the last fifteen years world production of petroleum chemicals has grown from less than half a million tons to more than 10 million tons per annum, and the scope for future development remains enormous.

The principal raw materials for the petrochemical industry are refinery by-products; mainly refinery gases and natural gas which were otherwise used as fuel. Some two-thirds of the total by weight, and about 90 per cent. by value, of the finished products are organic chemicals. Hundreds of different organic chemicals are now being produced from petroleum. Most of them were previously being made from other sources—vegetable, animal, or coal—long before petroleum entered the chemical field.

Inorganic chemicals are also produced in large quantities, but having much lower unit values they are not of comparable importance. The scope of petroleum is restricted in this field and the only major products are carbon black (used in great quantities in the rubber tyre industry), nitrogenous fertilizers, sulphur and sulphuric acid.

Petroleum chemicals take the following forms: (*a*) solvents, primarily in the manufacture of paints and lacquers, but also in extraction and as intermediates in making other chemicals; (*b*) synthetic detergents, based very largely on petroleum, which now account for about one-third of the world market for washing and cleaning materials of all kinds; (*c*) plastics and resins; (*d*) synthetic rubber; (*e*) synthetic fibres; and (*f*) insecticides, weed killers, etc.

ORGANIZATIONS AND THEIR PUBLICATIONS

I will say a few words on four organizations dealing with petroleum, and their publications as well as a few books which I feel would be useful for people not working in the petroleum industry.

The four organizations are as follows: the Petroleum Information Bureau (29 New Bond Street, London, W.1) is a body set up by some of the petroleum companies to further the public relations side of the industry and to make better known its activities, difficulties, and achievements. Information is provided by the Bureau on any aspect of petroleum, and statistics are compiled of the industry's activities. It provides both literature and visual aids, and its sister organization, The Petroleum Films Bureau, makes available films produced and sponsored by some of the oil companies. A description of the activities of the Petroleum Information Bureau is given in the *Review of the Institute of Petroleum*[1] for December 1955 on page 301.

The Institute of Petroleum (61 New Cavendish Street, London, W.1) is a society having the object of furthering the scientific and technological study of petroleum.

It is perhaps worth mentioning that its Standardization Committee has the terms of reference (*a*) to devise and improve, as necessary, methods of testing, measuring, and sampling petroleum products and by-products; (*b*) to recommend nomenclature for the definitions of these products; and (*c*) to co-operate with similar organizations in the United Kingdom and abroad in securing uniformity of test methods. There are fourteen sub-committees most of which control panels responsible for co-operative investigations of specific tests, or groups of tests.

The American Petroleum Institute is a body in many ways similar to the Institute of Petroleum but sponsored by the petroleum industry in America, and responsible for financing and directing a wide research programme of a fundamental nature on petroleum and petroleum hydrocarbons.

The Institut Français du Pétrole is a professional body with the triple object of the initiation and execution of research, the training of personnel, and of documentation in the field of petroleum.

Now to deal with their publications. The Petroleum Information Bureau publishes a comprehensive range of memoranda which is distributed on request throughout the United Kingdom to a wide variety of organizations such as the armed services, schools, industrial organizations, free-lance lecturers, public libraries, clubs and hotels, political organizations, etc. It provides services to the Press as well as an inquiry service.

The Institute of Petroleum publishes its *Journal*[2] which contains papers, abstracts, book reviews, etc. A separate publication, the *Review*, contains general articles as well as notes of interest to members and notes on branch activities, books and films, trade literature, forthcoming meetings, etc.

The *Reviews of petroleum technology*,[3] which are published every three years, review progress in the main branches of petroleum technology. A separate series entitled *Modern petroleum technology*[4] forms a collection of monographs on all aspects of petroleum.

One of the most useful publications of the Institute of Petroleum is its *Standard methods for testing petroleum and its products*.[5] This is a collection of little less than 160 methods, produced in co-operation with the industry and other bodies, to standardize the control of product quality. Each describes the scope and the outline of the method, the materials used, the procedure adopted and notes on calculation and reporting. These methods cover a very wide range of subjects from the determination of the acidity of bitumen to the determination of the vapour pressure of the petroleum gases. A separate book entitled *Engine test methods for rating fuels*[6] describes methods for determining the knock ratings of motor and aviation fuels and the ignition quality of diesel fuels.

The Institute of Petroleum also publishes a *Glossary of petroleum terms*[7] (the second edition appeared in 1955) couched in as simple language as possible with the object of helping non-technical readers consulting the *Glossary*.

The American Petroleum Institute also publishes a number of documents as follows: The *A.P.I. Quarterly*,[8] which is a bulletin issued to members on the activities of the A.P.I. and includes book reviews, and forthcoming meetings.

The *A.P.I. Proceedings*,[9] published annually, are divided into six sections and include the addresses and reports presented at the Institute's forums throughout the year, i.e. the annual meeting, division mid-year meetings, quarterly lubrication meetings, and selected papers at district and committee meetings. The divisions are (*i*) General, (*ii*) Marketing, (*iii*) Refining, (*iv*) Production, (*v*) Transportation and (*vi*) the Interdivisional section covering medical, public relations, petroleum statistics and finance.

The *A.P.I. Glossary of terms used in petroleum refining*[10] was issued in 1953. This is a book of eighty-eight pages with an appendix giving Gregg and Pitman shorthand outlines of the terms used.

The *A.P.I. Technical Abstracts*.[11] This is a weekly abstract service, available as a bulletin or as sets of cards, covering one hundred of the most important journals of interest to the industry and classified by a specially devised classification.

Toxicological reviews are issued irregularly.

Research Reports are issued to members in connection with seven projects being worked at the moment. They deal with the analysis, purification, properties and synthesis of hydrocarbons, and sulphur and nitrogen compounds.

One of the most useful projects to us is Number 44, which includes the compilation of the 'Selected values of physical and thermodynamic properties of hydrocarbons and compounds'. The aim is to collect, calculate and compile data of interest to the petroleum industry, covering physical, thermodynamic, and infra-red, ultra-violet, Raman, and mass spectral properties of hydrocarbons and all related compounds. The overall purpose of the project is to maintain up to date a complete set of data critically selected, on the physical, thermodynamic and spectral properties of petroleum-derived compounds, to aid the petroleum industry to utilize its raw material to the greatest possible advantage.

As an example, the properties being investigated include the following: boiling point, refractive index, density, freezing point, viscosity, vapour pressure, surface tension, heat of vaporization, heat of formation, heat of fusion, etc.

The compounds covered, or to be covered, include hydrocarbons of all types and molecular weights, and all non-hydrocarbon compounds of importance to the petroleum industry such as organic sulphur compounds, organic oxygen compounds, and simple nitrogen compounds.

The number of papers in the lists of references was over 2,500 in 1953 and is constantly being increased.

This project is the work of a team operating at the Carnegie Institute of Technology and it is worth while going beyond the field of petroleum to mention that a similar team is also working at the same Institute on 'Selected values of properties of chemical compounds' under the auspices of the Manufacturing Chemists Association at 1625 Eye Street, N.W., Washington, 6, D.C. The aims of this research project are similar: 'to produce and maintain up to date, a complete and self-consistent set of tables on physical and thermodynamic properties, critically selected and arranged in a convenient form for ready use, covering, in due course, all chemical compounds of interest and importance to the Science and Technology of the Chemical Industry of the U.S.A.'.

Published data are being traced back to original sources via *Chemical Abstracts* and carefully examined on the basis of an accurate record of the basic quantities actually measured by the investigator—not calculated or derived. As with the A.P.I. selected data, tables are printed on loose-leaf sheets 8 in. × 10½ in. and distributed twice yearly. Four sets totalling about 300 sheets have already been issued and cover nitrogen and nitrogen oxides, compounds of nitrogen and hydrogen, and halogenated hydrocarbons.

Another publication by the A.P.I. is entitled *Petroleum facts and figures*,[12] which deals with statistics in the American petroleum industry. It includes sections on utilization, production, refining, transportation, marketing, prices and taxation in the various states of America.

The work of the French Institute of Petroleum is published in their journal *La Revue de l'Institut Français du Pétrole*,[13] sometimes in other journals and in contributions to conferences, etc.

There are of course other bodies dealing with petroleum in conjunction with other materials, such as the D.S.I.R. Road Research Laboratory and Fuel Research Laboratory and in America the A.S.T.M. who issue the well-known Standards as well as many publications on petroleum, including their *Standards on petroleum products and lubricants*,[14] which is a document similar to that of the Institute of Petroleum.

To come to the books.

Skinner's *Oil and petroleum year book*[15] which is now in its forty-seventh edition gives accurate and comprehensive information on oil companies operating in all parts of the world, and covers 950 companies. Notes are given on the business, capital, recent dividends and accounts. The book includes a buyers' guide and a list of names and addresses of managers, engineers, etc., and the companies in the book with which they are connected.

The *Science of petroleum*,[16] published by the Oxford University Press originally in four volumes, has the sub-title 'A comprehensive treatise of the principles and practice of the production, refining, transport, and distribution of mineral oil'. Subsequently volumes 5 and 6 have been added, and they extend the scope of this work to include synthetic products and the utilization of mineral oils and their derivatives.

The *Petroleum data book* published by the Petroleum Engineer Publishing Co. is a comprehensive source book of authoritative information on operations in the petroleum and natural gas industry of the world. It includes statistics on production and refining as well as on such subjects as investment and finance, and taxation.

That concludes my remarks on petroleum organizations and their publications and will, I hope, give some assistance to those who might be asked to find the sort of information I have been speaking about.

TECHNICAL INFORMATION SECTION AT THORNTON

Before talking about Thornton Technical Information Section I will say a few words on the research activities of the Royal Dutch/Shell Group of Companies to which I belong in order to make clear the position of Thornton itself in the organization. Research in the Group has expanded greatly in recent years, and is now conducted by fourteen laboratories located in America, the Netherlands and this country, employing altogether nearly 5,000 people. The subjects covered are very wide and extend from geological studies concerned with the discovery of new sources of oil to the task of improving oil product quality. The expenditure on research is at present about £14 million per annum. While these various laboratories work to a large extent as separate entities, there is a general integration of their programmes to avoid unnecessary duplication of effort. An important part of the Group's research effort is dedicated to fundamental research. This includes the study of new chemical reactions, catalysis, colloid-chemical problems and theoretical chemistry and physics. Research planning is achieved through a series of meetings attended by representatives of the research laboratories and various other departments directly concerned. There is also a rapid exchange of information between various laboratories through the medium of reports.

Thornton Research Centre dates from 1941 when the Aero Engine Laboratory was built. Subsequently lubricating oil, chemical and diesel fuel laboratories were built and they were co-ordinated at the end of 1946 to form Thornton Research Centre, which is responsible for carrying out research into the application of petroleum products and into the development of new or improved products. Prior to 1947 the Aero Engine Laboratory had its own library and another served the Lubricating Oil Laboratory and the Chemical Laboratory. These two libraries have been combined since 1947 and extended to form the present Technical Information Section. Initially it served Thornton only, but since 1951 it has served the adjacent Shell Refinery at Stanlow as well.

From the point of view of the Technical Information Section, our main customers are the various sections of Thornton Research Centre and Stanlow Refinery. At Thornton, apart from six sections working directly on different types of fuels, lubricants and bitumen, there are other sections such as Products General which studies phenomena, more or less without reference to the product in which they occur, Chemicals and Process Section responsible for chemical syntheses and which operates in close connection with the Experimental Plant where the larger scale work is done, a section dealing with analysis of all kinds, as well as metallurgy, as a service to the products sections, an Applied Physics Section which plans instrumentation required for research projects and sometimes produces instruments not available commercially, an Engineering Section which provides and maintains plant and equipment, as well as Report Editing, Publications and Photographic Sections. At Stanlow, apart from the Operations Departments and Chemical Plants, responsible for the day-to-day operation of the Refinery, the Technological Department is responsible for overcoming process troubles and for planning improvements in processes. A large Engineering Department is responsible for the erection and maintenance of plant, from the largest scale equipment to instruments. There are other departments such as Utilities (which provides all services from electricity to steam), laboratories for Product Control, and Medical, Fire and Safety, Training and Accounts Departments, and several others.

Technical Information Section, which is located at Thornton, is composed of the Library, the Report Office, and the Abstracting and Inquiry Service. The Library deals with published literature of all kinds and holds over 7,000 volumes. It subscribes to more than four hundred journals. Taking the circulation of one copy of a journal to one person as a unit, the average journal circulation amounts to more than 2,000 monthly.

The Report Office, which deals mainly with unpublished material, receives reports at the rate of approximately two hundred a week, a large proportion coming from specialist departments of Shell Petroleum Co., Shell Refining Co. and "Shell" Research Ltd., as well as from many overseas companies in the Royal Dutch/Shell Group. The reports issued by Thornton alone are in excess of 1,500 per annum. Our present stock is something of the order of 70,000 reports.

The circulation of reports amounts to 3,600 operations monthly.

As the area covered by the Refinery extends to nearly 2,000 acres, of which almost two-thirds are occupied by plant, tank farms, and distribution facilities, we have certain problems in keeping track of documents sent out.

Non-technical staff from the Library and Report Office are placed in rotation in three offices in different points of the Refinery and they deal there with the circulation, recalling and filing of documents. Technical inquiries are made direct from the Refinery staff to the Abstracting and Inquiry service.

The Abstracting and Inquiry service abstracts, classifies and indexes journal articles and reports, arranges the initial circulation of reports and deals with technical inquiries from the Research Centre and the Refinery.

We produce abstracts of journal articles for two reasons: (*i*) The abstract bulletins are circulated to staff in the Research Centre and Stanlow Refinery to indicate the articles of interest which appear in journals received the previous week. Copies are also supplied to several departments of Group companies in London as well as to nearly forty countries overseas. (*ii*) The abstracts are classified and indexed so that they can be used for answering queries. It may be worth mentioning that the use of dictating machines has cut short the time required to produce our abstracts.

We do not circulate abstracts of reports because the reports themselves are circulated to the staff concerned, but abstracts are made for the index which contains 130,000 cards. A *Bulletin of Reports* is circulated so that staff not on the initial circulation lists may be aware of the arrival of reports which may be of interest to them.

We receive many inquiries and have evolved a system for recording them but we record only those that take half an hour or more. We use a card to record the inquiry, the name of the inquirer, the date of the inquiry, the sources consulted, the answers produced, and the date the inquiry is closed. We also record the time taken. When the answer is lengthy, the references are typed or duplicated in the form of a bibliography and this is given a reference number and filed separately. The query forms are classified by subject and filed as an index. This index is very useful for the type of inquiry which recurs at intervals as some of them do.

We use our own classification system for the main subject index and this system has been adopted by the technical departments in several countries.

We send a representative to attend the meetings of the Classification Research Group, as we are working on a preliminary pilot system of a faceted classification and wish to explore what advantages such a system has over our present system. We are working on preliminary schedules and are intending to run a small pilot card index in order to gain more experience with the system.

Our present system is not, however, applied to books, nor to trade catalogues, for which we have devised separate simple systems which have proved adequate. This state of affairs is justified by the fact that, to us, books are generally of less value than recent journal articles, or reports which usually contain the most up-to-date information.

It is necessary for the technical staff to be acquainted with the work being done in the different sections of the Research Centre and the Refinery and, to this end, correspondence files from the sections of Thornton are regularly circulated to us, progress reports are examined, and visits are made by the Technical Information Section staff to the various sections of both Thornton and Stanlow. We also attend meetings and discussions.

Technical Information Section is fortunate in having an active Publications Section at Thornton, responsible mainly for the production of reports. It duplicates our abstract bulletins, literature searches, accession lists, etc. Arising from conversations with Publications Section, we use journal and report circulation lists which are produced in two operations. Firstly, the framework is printed bearing the title of the journal, etc., in fact everything but the names and the date. These are printed in numbers sufficient to last twelve months. The names are added afterwards in a separate operation, which takes very little time and only a small number are printed. This means that circulation lists can be changed as often as necessary with very little trouble. The only thing written on the slip is the date.

Requests for document copying are made to Technical Information Section and not to Publications Section who do the actual copying. Our function here is to record the number of the negatives, so that these negatives are available for future copies, and to record who has the copies.

Publications Section also operate for us the transparent microcard camera, which we are using at the moment for making permanent records of the early Thornton reports, of which we hold the only remaining copies.

We borrow documents from within the Royal Dutch/Shell Group and outside at a rate of about 1,500 per annum, our largest external source being the Liverpool Public Library Service.

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In the course of a short discussion which followed Mr. Mote's paper, MR. V. BISKE (Lobitos Oilfields Ltd.) drew attention to the Institute of Petroleum's decision to discontinue publishing *Reviews of Petroleum Technology*; demand for the first tri-annual volume, covering 1952–54, had been disappointing. On the question of Standard Methods, Mr. Biske referred to the close similarity between some of the A.S.T.M. and I.P. methods; future issues of the I.P. publication would indicate which methods were considered to be technically identical with the corresponding A.S.T.M. methods. He also mentioned the close co-operation between the Institute of Petroleum and the British Standards Institution.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

ASLIB CALENDAR

APRIL

FRIDAY 11th–SUNDAY 13th. Aeronautical Group Conference. See paragraph below.

MONDAY 14th. Commencement of course on advanced classification and indexing. See paragraph below.

WEDNESDAY 23rd. Engineering Group visit to Shell Oil Refinery, Isle of Grain.

TUESDAY 29th–WEDNESDAY 30th. Course on work with patents and patent law. See paragraph below.

MAY

TUESDAY 20th. Second conference on Business Records. Programmes available from Aslib early April.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference. Nottingham University.

National Central Library: Aslib Representative

Mr. L. G. Patrick, F.L.A., Librarian, Aluminium Laboratories Limited, has been nominated to represent Aslib on the Executive Committee of the National Central Library for the three-year period commencing 1st March 1958 in succession to Mr. C. W. Cleverdon who has served as Aslib representative since 1956.

Scottish Branch

At the Annual General Meeting on 7th February members reluctantly accepted the resignation of Mrs. Margaret Spence from the position of Branch Secretary which she has held for the past ten years. Miss N. I. Shinie, of T. & H. Smith Ltd., Wheatfield Road, Edinburgh 11, was appointed in her stead. Mrs. Spence accepted a small gift from the Committee in recognition of her work.

There was a good attendance of members at the one-day conference that followed. In spite of the bad weather they had come from as far north as Aberdeen. Miss Margaret Haferd, Librarian, United States Information Service, outlined various ways of providing information about products, processes, etc., in the United States. Dr. Malloch, Edinburgh-born but representing the National Research Council of Canada, spoke on scientific information in the modern world. He criticized the textbooks used in scientific classes, emphasized the role of information officers, and advocated dissemination of information by personal contact through field officers. It is hoped to publish the papers given by Miss Haferd and Dr. Malloch in a future issue of *Aslib Proceedings*. In the afternoon Miss L. Sømme, Hammerfest, Norway; Miss

T. Visser, Utrecht, Netherlands; and Miss E. De Silva, from Ceylon and Kenya—all now working in libraries in Edinburgh and Aberdeen—gave accounts of the growth of library work in their own countries. Each said that the greatest development has taken place recently. Miss Sømme explained that the purchase and binding of books for the Norwegian libraries is carried out by the State, and described a project to provide mobile libraries afloat to serve the islands. Miss Visser described the multiplicity of libraries in Holland, most towns having three—neutral, Roman Catholic, and Calvinistic—all State aided, and she told of the Netherlands Institute for Documentation and Filing, and the union list of periodicals held in the 166 libraries maintained by the Royal Library at The Hague. Miss De Silva compared the up-to-date facilities of the Aberdeen Public Library with the backwardness of those few in Ceylon and Kenya, but pointed out that the latter were being developed on British systems.

Northern Branch

Thirty-eight people attended the eleventh Annual General Meeting of the Branch on 24th January in Manchester. Mrs. K. Scott retired from the Committee and three new members were elected. The Committee is now as follows: Chairman, A. R. Cameron; Vice-Chairman, V. D. Freedland; Hon. Treasurer, F. Newby; Hon. Secretary, Miss E. Boddy. Members: L. L. Ardern, J. E. Bolton-Allen, Miss D. Caldwell, J. A. Cartledge, G. H. Davison, P. R. Day, Dr. R. E. Fairbairn (*ex officio*), J. R. Ireland, C. C. Linstead, Miss A. J. Spencer. After the business meeting Mr. C. W. Cleverdon, Librarian, College of Aeronautics, and Chairman of Aslib Council, spoke to the delegates.

Aeronautical Group

Further details are now available of the programme for the group's seventh annual conference to be held at the College of Aeronautics, Cranfield, in April.

Friday 11th. Delegates assemble at 6 p.m. and later visit the College Library.

Saturday 12th. At the morning session Mr. J. Sharp will speak on subject cataloguing in aeronautics and Mr. C. Wilson on the use of aerodynamic reports. The Annual General Meeting will take place in the afternoon and will be followed by a paper on Russian aeronautical literature given by Mr. A. H. Holloway. A reception and Conference dinner will be held in the evening.

Sunday 13th. Mr. H. R. Verry and Mr. J. Burkett will speak in turn on microreproduction at the morning session and the afternoon will be devoted to a discussion of their papers.

The conference fee will be 5 gns. For further information please write to Mr. Cyril W. Cleverdon, Librarian, The College of Aeronautics Library, Cranfield, Bletchley, Bucks.

Electronics Group

An Electronics Group of Aslib has now been formed. It is not a section of the Engineering Group as suggested in a notice in the January issue, but a separate group, as it is felt that the subject of electronics is not confined to engineering. A Group Committee has been set up under the chairmanship of

Mr. J. E. Wright, Institution of Electrical Engineers. Inquiries should be addressed to the Secretary, Mr. N. E. C. Isotta, Ministry of Supply, T.I.L.2, First Avenue House, High Holborn, London, W.C.1.

Film Production Librarians

At the meeting held on 9th January Mr. E. Lindgren gave a talk on the work of the National Film Archive. He stressed the primary aim of preserving films notable as works of art or historical or scientific records. He described how films were selected and copies obtained and explained the necessary restrictions on their use, and dealt briefly with the technical side of the work and with the impact of modern developments such as television, magnetic sound recording, and colour film. Mr. Lindgren said that the Archive now has 7,500 films and newsreel material dating back to 1895, a large Stills Department, and a limited amount of scripts, costume and set designs, and other material.

Mechanical Translation

A meeting of persons interested in the practical possibilities of mechanical translation is to be held under Aslib's auspices on Monday 21st April 1958. The purpose of the meeting is to ascertain whether there is any serious interest in the development of translating machines in this country and, if so, what are the requirements of potential purchasers of such machines. A large meeting is not envisaged, but an invitation will be extended on request to representatives of the larger companies and establishments which are, presumably, the ones most likely to have a practical interest in translating machines. Since information officers and librarians may not, in all cases, be the persons most directly concerned, members are requested to pass on information concerning this meeting where appropriate. Inquiries should be addressed to the Director of Aslib.

Aslib Courses

Following the success of the course on advanced classification and indexing held in December 1957 a similar programme has been arranged to start on Monday 14th April. The lectures will take place on Monday evenings from 14th April to 2nd June inclusive, with the exception of Whit Monday 26th May; the lecture scheduled for this date will, instead, be given on Wednesday 28th May. The lecturer will again be Mr. J. Mills, F.L.A., Department of Librarianship, North-Western Polytechnic.

A course on work with patents and elementary patent law will be held on Tuesday 29th and Wednesday 30th April. The lecturer will be Mr. Felix Liebesny, Senior Technical Information Officer, Patent Department, Mond Nickel Co.

Both these courses will be held in London.

Library Association

The sixth Annual Conference and Study Group of the Library Association, Reference and Special Libraries Section, will be held from 18th to 21st April in

St. Andrew's Hall, University of Reading. The conference theme is Information Services: national and international, and the speakers will be Dr. H. Coblans, M.SC., European Organization for Nuclear Research, Geneva; Mr. L. J. Anthony, F.L.A., Atomic Energy Research Establishment, Harwell; and Mr. K. J. Rider, A.L.A., Technical Library, Birmingham Public Libraries. Inquiries should be addressed to the Conference Secretary, Mr. J. A. Hargreaves, A.L.A., 11 Highmoor Road, Reading, Berks.

Institute of Information Scientists

A new institute has been established 'to promote and maintain high standards in scientific and technical information work and to establish qualifications for those engaged in the profession'. This decision was made at a meeting of a group of information officers held on 23rd January under the chairmanship of Dr. G. Malcolm Dyson. Opening speeches were made by Mr. J. Farradane, Tate & Lyle Research Laboratories, and Mr. C. W. Hanson, B.SC., British Scientific Instrument Research Association.

Library of Congress Catalogue reprint

The *Catalog of books represented by Library of Congress printed cards* is to be reprinted. It was first published in 1942 and is now out of print, though there is a considerable demand for it as a valuable reference tool. The reprint will be issued by Pageant Books Inc., 59 Fourth Avenue, New York 3, N.Y. The price to subscribers who order before 1st September 1958 is $1,250 if payment also is made in advance, or $1,336 if payment is made for each volume as it is published. After 1st September the price will be $1,500.

Association of Assistant Librarians

The ninth annual week-end conference of the Association will be held from 28th to 30th March at University Hall, Liverpool. The theme of the conference will be impact of libraries in society and it will be divided into four discussion groups: impact on education, leader D. J. Foskett; impact on the reader, leader E. E. Moon; impact on the book trade, leader L. G. Lovell; and impact in the future, leader G. E. Smith. Visits to Speke Branch Library and Speke Hall, University Library and Picton Reference Library, and Liverpool docks and cathedral have also been arranged.

Vacations Abroad, X—1958

Volume X of Unesco's annual publication *Vacations abroad* offers again a wide selection of educational activities in over fifty countries throughout the world and contains information on courses, study tours, and work camps to be held in 1958. It includes information on financial aid to enable students to take part in summer courses. *Vacations abroad* is printed in three languages: English, French, and Spanish; price 5*s*., $1, or 300 fr.; obtainable from Unesco Documents and Publications Service, 19 avenue Kléber, Paris 16e, and in the United Kingdom from H.M.S.O. or any bookseller.

MEMBERS' ADVERTISEMENTS

MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared. American and English only. Work called for and delivered within reasonable distance. B. M. Collins, 77 Walm Lane, Willesden Green, London, N.W.2.

TRANSLATIONS, Technical and Commercial, from German and French, promptly executed by experienced man (on Aslib register of specialist translators). H. B. Andrews, F.R.S.A., F.I.L., 43 Wansunt Road, Bexley, Kent. Bexleyheath 3071.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations Vacant

LIBRARIANS required by THE ATOMIC WEAPONS RESEARCH ESTABLISHMENT, Aldermaston, Berkshire. EXPERIMENTAL/ASSISTANT EXPERIMENTAL OFFICER to assist in the running of a technical library. Higher School Certificate (Science) or equivalent qualification required but a degree or equivalent professional qualifications an advantage. Applicants for Experimental Officer must be at least 26 years of age. (Ref. 1708/205.) ASSISTANTS (SCIENTIFIC) for general duties in a technical library. G.C.E. Ord. level in four subjects, including English language and a Scientific subject or equivalent, is the minimum qualification. (Ref. A/1601/205.) SALARY: Experimental Officer—£990–£1,215 p.a. Assistant Experimental Officer—£395 at age 18–£700 at age 26 or over–£855 p.a. Assistant (Scientific)–£320 at age 16–£530 at age 25 or over–£700 p.a. (At present the rates for women over 18 are slightly lower.) Library qualifications and previous experience in a technical library an advantage. Junior staff encouraged to study for Library Association Examinations. Contributory Superannuation Scheme. A house or assistance towards legal expenses on house purchase will be available for married male officers living beyond daily travelling distance. POSTCARDS for application forms to the Senior Recruitment Officer at the above address. Please quote refs. above.

THE EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE invite applications for post of LIBRARIAN of the joint Library of the College and the Edinburgh University Department of Agriculture. Applicants should hold a library qualification, preferably be a graduate or have had experience in a technical or scientific library. The person appointed would also be responsible for some abstracting, some editing, and the setting up of an internal information service. Salary scale: £635 to £1,020, point of entry being determined by qualifications and experience. Forms of application, obtainable from the Secretary to the College, 13 George Square, Edinburgh 8, should be returned before 31st March.

EDITORIAL VACANCIES, monthly publication *Science Abstracts* (Section A—Physics): SECTION EDITOR, comm. salary £1,200–£1,400. ASSISTANT EDITOR, £850–£950, both accor. age and exp. Physics degree and knowledge of Physics Literature essential. Progressive posts. Pension Scheme. Five-day week. Apply Secretary, The Institution of Electrical Engineers, Savoy Place, W.C.2.

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NATIONAL INSTITUTE FOR RESEARCH IN DAIRYING (UNIVERSITY OF READING). Applications are invited for the post of Assistant Librarian in the Dairy Science Library with the prospect of succeeding to the post of Librarian upon the retirement at 30th September 1958 of the present occupant. The

Librarian will be under the general supervision and control of the Information Officer. Candidates should be Chartered Librarians. Maximum commencing salary £615 p.a. in scale rising to £990 (women's scale slightly lower) with membership of contributory superannuation scheme. Apply to the Secretary, N.I.R.D., Shinfield, Reading, within fourteen days of the appearance of this advertisement. *Quote reference* 58/4.

READS OF LIVERPOOL. INFORMATION OFFICER/LIBRARIAN is required by Reads Ltd., manufacturers of metal containers. This position is created by expansion and the development of high-speed can production, involving the use of both British and American technical and scientific knowledge. Applications are required from candidates possessing a technical background of chemistry and engineering, together with experience or knowledge of librarianship. The company operate a five-day week, pension and life assurance scheme. Salary will be in accordance with age and experience. Inquiries should be addressed to The Senior Personnel Officer, (NH/Mis.), Reads Limited, Orrell Lane, Liverpool 9.

WOMAN ASSISTANT, senior capacity, for office of publication *Science Abstracts*. Some knowledge of scientific information work, and experience of periodicals, required. Good comm. salary. Progressive post. Pension Scheme. Luncheon Restaurant. Five-day week. Apply Assistant Secretary, Institution of Electrical Engineers, Savoy Place, W.C.2.

For Disposal

The Gas world, vols. 102–116, 118–122, bound. *Gas times*, vols. 2–11, 13–69, bound; vols. 70–83 unbound. *Gas times news bulletin*, vols. 29–44, bound. *Transactions of the Institution of Gas Engineers*, vols. 80–90, bound. *Industrial gas times*, vols. 5–7, bound. *American Gas Association monthly*, vols. 28 and 29, bound. *Refrigeration engineering*, vols. 53–60 and 62, unbound, missing Oct. 1948 and Dec. 1954 numbers. *Gas salesman*, vol. 21, bound. *Gas service*, vol. 23, bound. *A.G.A. rate service*, *c.* 1946–7, loose-leaf binder. *American gas handbook*, 1953. *The Gas world year book*, 1955. *Register of the gas industry*, 1955. *Who's who in the gas industry*, 1955. Daynes, H. A. *Gas analysis by measurement of thermal conductivity;* C.U.P., 1933. Keenan, J. H., and Kaye, J. *Gas tables: thermodynamic properties of air; products of combustion and component gases; compressible flow functions:* Wiley, 1948. Lunge, G. *Technical gas analysis;* Gurney & Jackson, 1934. Smith, N. S., and Le Fevre, R. N. *Domestic utilization of gas: the principles involved;* part 2; W. King, 1936. Marshall, A. *Explosives*, 2nd ed., 1917; Churchill; 3 vols. The Librarian, Nash & Thompson Limited, Oakcroft Road, Chessington, Surrey.

Jahresberichte der gewerblichen Berufsgenossenschaften Unfallverhütung, 1951–5. Two vols. each year. Total weight 48 lb. All or any volumes may be collected free of charge from the Industrial Safety Division, The Royal Society for the Prevention of Accidents, 38 Millbank, London, S.W.1, by arrangement.

For Sale

Simmonds, C. E. *Technical education in the USSR.* Introduction by E. G. Godfrey. 36 pp. demy 8vo. 2*s.* 6*d.* (post free 2*s.* 10*d.*). Society for Cultural Relations with the USSR, 14 Kensington Square, London, W.8.

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SIGNPOSTS

SOME SELECTIONS FROM THE 1957 SPECIAL LIBRARY LITERATURE

BY J. BIRD, M.A., F.L.A.
Aslib Librarian

INFORMATION and special library work is at present a profession that is in the process of formation and struggling for recognition, and entry into it is entirely uncontrolled. People with the most varied backgrounds and levels of education find themselves made responsible for setting up or running library and information services, without any previous knowledge of the work. Often they are in remote places and without any contact with more experienced colleagues who could give them advice, and their only means of getting the knowledge necessary for the efficient carrying out of their duties is from reading. But, owing to the unsettled state of the profession, the literature is voluminous and scattered, and much of it is of a low standard, or occupied with pure theorizing or polemics. Moreover, the literature that the novice is most likely to see, namely the articles on documentation which are occasionally printed in technical journals, is not always the most helpful for a person who has no background of experience against which he can evaluate it. In these circumstances the new entrant needs a guide to the literature if he is not to be discouraged or adopt practices and systems which are not really suitable to his circumstances. It is to meet this need that this annual review of the literature, now in its sixth year, has been written. It attempts to select those books and papers which are most likely to be of direct help in running a small information department or library, eschewing all pure theorizing and polemics, and only including literature on large libraries where it is felt that it contains ideas capable of application in smaller organizations. To these are added a selection of the most important works of reference, including some that the information officer may wish to know about and consult in other libraries, even though his own library does not possess them. The list is not restricted to work published in 1957, but is intended to be representative of items received in British libraries during the period under review. Owing to restrictions in space, the selection has to be rigorous, and is inevitably, to a certain extent, a personal one. No two people would probably agree on all the omissions, but it is hoped that all the items included will be of positive value to the type of reader for whom the review is intended.

Introductions to information and library work written specially for the type of person whom we have in mind in this survey are not common, but the year under review saw the publication of two of these. Dr. Holmstrom's *Records and research* has been the source from which many people in the engineering industry and related technical fields have received a sound introduction to the principles of the control and use of information, and the third edition[1], bringing it up to date so as to cover the important developments of recent years, has greatly increased its value. In a country like Australia, where libraries and industrial establishments are more scattered than in Britain, the difficulties of the novice in information work are even more acute. To meet this situation the Public Library of New South Wales has produced an elementary guide to library practice[2] which similarly situated readers in this country should also find valuable.

In order to fulfil his duties it is necessary that the information worker should understand the purpose of his work, and to do this he must study the general background of the relationship between information and research and industry both in the individual firm and in the country as a whole. The review by Carter and Williams[3] gives a good general picture of the situation. The extent to which use is made of the available information in certain sectors in industry was studied by Professor Curtis[4] and Moss and Wilkins[5], while the actual use made of the literature by scientists was studied by Shaw[6].

As in the previous year, technical college libraries, which, in view of need for increasing the country's reserves of technical manpower, have come to be regarded as a key factor in the development of the use of technical information, received a great deal of attention. The newly formed sub-section of the Library Association which looks after the interests of technical college librarians issued recommendations for the staffing and equipping of technical college libraries[7], while the Ministry of Education, in its Circular 322[8], issued official recommendations for the guidance of local education authorities. The Hertfordshire County Council, which has done important pioneering work both in the staffing and organization of technical college libraries, and in the provision of information services to local industry, issued a report describing its plans[9]. Lord Verulam, in a most stimulating paper[10] given to the Aslib conference on the subject, emphasized the important part that the technical college library has to play in the broader aspects of the education of technical students.

Special libraries, which have to cater for organizations whose requirements are diverse and often changing, are more conscious than others of the need for co-operation with other libraries, and the new information officer will need to keep himself informed both of existing arrangements and plans for the future. Undoubtedly the most important event in this field during 1957 was the beginning of active work on the planning of the new National Lending Library for Science and Technology. This was the subject of a number of papers, of which the most important was that in which Dr. Urquhart introduced the scheme[11]. Another document which may prove of importance in influencing future developments was the final report of the Library Association committee which has been studying possible schemes for co-operative acquisition[12].

Bibliographies are among the most important items in the literature for special librarians. They are essential both to building up basic stocks and current book selection, as well as to reference work, and the bibliographies of bibliographies are the very foundation for much of information work. Miss Winchell produced a second supplement[13] to her great standard work, while her French counterpart, Mlle Malclès, produced a popular book[14] which, though it contains much of largely historical interest, is a good introduction for the general reader on the lines of the Pelican series. Aslib issued a greatly improved fifth edition of the *Select list of standard scientific and technical books*[15]. Guides to the literature of a subject are of great value to the librarian, especially the beginner, and this type of work is being issued in greater numbers. The year saw a new edition of the well-known Crane and Patterson[16] in the field of chemistry, and new guides to the literature of pharmacy[17] and business[18]. Statistics are a field in which guides are especially needed; the Royal Statistical Society produced a further volume of reviews of the sources for different subjects[19] and the Market Research Society issued a guide to its own field[20]. For special types of literature there was a guide to unpublished report literature[21] and the first volume of an ambitious new project by Henderson which aims to cover the directories of the world[22].

As periodicals are so important to special libraries the bibliographies of them deserve separate treatment. There was a new edition of Ulrich[23], the important selective list, which lists the most important journals in each subject. National lists are often the best means of checking an obscure title, and these included a fully annotated retrospective bibliography from the Soviet Union[24], a new German list[25] in many respects superior to its competitors, and a list from Finland[26]. Lists on special subjects included the long-awaited new edition of the *Chemical Abstracts* list[27], and a Unesco list on the social sciences[28]. Union lists are very important in the bibliographical control of periodicals. The year saw two further volumes of BUCOP[29], current lists of foreign periodicals from Germany[30] and France[31] and a retrospective list of periodicals in Cyrillic characters also from France[32]. There was also a second edition of a useful British list of legal periodicals[33]. Catalogues of the holdings of individual libraries which all scientific libraries will want to obtain are those of the Science Library[34] and the Patent Office[35]. *IOTA*[36] is a welcome addition to the general indexing journals because, although its classification could be greatly improved, which greatly limits its value for retrospective searching, its coverage of British technical journals is virtually complete and it is excellent for current scanning.

Directories are another important source for reference work with which the information worker must keep up to date. Directories of libraries included British lists of medical[37] and agricultural[38] libraries, and a Japanese list[39] which is usable without any knowledge of the language. The new edition of the *Handbook of scientific and learned societies*[40] is almost indispensable to British libraries. The *Directory of office equipment*[41] is a most valuable guide to suppliers of much of the equipment used in libraries. The *Year book of technical education*[42] is fuller than anything that has previously appeared in this field. Important foreign directories included a list of German publishers[43] which covers both East and West Germany and publishers of German books in other countries, a directory of American trade associations[44], and a list of French laboratories[45].

The literature of cataloguing, classification and related problems of information retrieval is particularly difficult for the novice. Not only is it the most complicated and intrinsically difficult aspect of information work, it is also beset with cranks and writers publicizing their own systems. Yet its importance cannot be denied, and it is essential that the novice should master the basic theory and techniques before he attempts to assess the newer developments. Textbooks like those of Eaton[46] and Dewey[47] are valuable for this purpose. A lucid article by Coates[48] should be of great value to those using an alphabetical subject catalogue. Filing rules often give rise to difficulties before the danger is realized, and the code for smaller libraries by Moakley[49] and the new Library of Congress code[50] should prove valuable. Unesco issued a code for cataloguing films and filmstrips[51]. Forms of place names often give rise to difficulties in cataloguing and cataloguers will welcome a popular book on this subject by Aurousseau[52]. An important event of the year was the introduction of B.N.B. printed cards, and these are described in an article by Wells[53]. From the major classification schemes the year saw a new edition of the abridged English edition of the U.D.C.[54], and the basic tables for the fifth edition of Colon[55]. English librarians have often lamented the lack of a simple introduction to the use of the U.D.C.: in 1957 two were issued in German, by Herrmann[56] and Fill[57]. On the more advanced aspects of information retrieval the beginner will probably be interested to see two reviews of current problems prepared for Unesco by Coblans[58] and Miss Kyle[59], and may care to dip into the book edited by Shera[60], the first of a series of American conferences on the subject, and the long-awaited section on retrieval of the *F.I.D. Manual*[61]. For a sober evaluation of some of the new techniques he may turn to the paper by Warheit[62].

The techniques of reference work are not as often discussed in the literature as they might be. The primer by Hepworth[63], though written largely with public libraries in mind, is a good introduction to reference work. A paper by Goodrum[64] describing the methods of the Legislative Reference Service of the Library of Congress, though it deals with a library with immense resources, may well suggest ideas of value to the special librarian.

Acquisition methods and policies are also too rarely discussed, but the growing importance of foreign literature has made this an important topic. Papers by Chiu[65] on Far Eastern literature and Hoseh[66] and Stubbs[67] on Russian literature are an example of this trend. The related question of weeding is even less discussed, but there was a paper by Surrency[68] on the subject. This is a more important matter in the field of business records, and was discussed by Mathys in a paper[69] read at the Aslib conference on business archives. The literature of office management often produces papers of value to librarians, and a paper by Brooke[70] on the costs of clerical services, a useful check list on the design of forms[71] and a British Standard on correspondence files[72] should all be seen by workers in information departments. To return to the library literature, Armstrong described an original and ingenious charging system[73], while Mixer discussed the considerations involved in preparing an evaluation of the catalogue for insurance purposes[74]. The considerations involved in planning the accommodation and equipment of special libraries including costs were discussed in papers by Gibbings[75] and Miss Binns[76]. Special libraries often have to adopt makeshift accommodation for library purposes, and Oberhummer's account[77] of the difficulties of setting up book stacks in damp basements may be found useful.

Special librarians of necessity are more concerned than anybody else with the handling of materials other than the printed book. Technical reports are perhaps the most troublesome of these, and the report by Gray and Rosenborg[78] on the extent to which the information in them is eventually published in other forms is of considerable importance. Theses are another headache, and Bauhuis has produced a report on the availability of current German theses[79]. The Library of Congress issued a new edition of its manual on the care of maps[80], and Jones a useful paper on the care of technical drawings[81].

Document reproduction has always been of particular importance to special libraries. Burkett issued a general guide to micro-recording[82], while in America the Special Libraries Association reissued the American Library Association's *Guide to microfilming practices*[83]. Microcards have not been widely used in Great Britain, largely owing to lack of a suitable reader. The reasons for the inadequacy of most microcard readers were explained in a short note by Power[84] and the currently available readers were reviewed by Richnell[85]. Laclémandière gives advice on how to select a reproduction process for a particular job[86]. Herrmann produced a general textbook on duplicating and reproduction[87] and Caruzzi a new edition of his manual on the offset duplication of publications[88]. The passing of the Copyright Act, 1956, introduced a new situation into document copying which placed most industrial libraries in a difficult position, and all libraries employing reproduction methods in any way should obtain copies of the Act[89] and of the *Copyright (libraries) regulations*[90] which go with it. The Act is full of obscurities, but although a number of commentaries on it have been published, there has been no guide for librarians on this aspect of it, and it is badly needed. Meanwhile for many libraries the Royal Society's *Fair copying declaration* remains in force, and a new edition was published[91].

From the special librarian's point of view binding is all too often a question of economics rather than aesthetics—it is therefore a pleasure to recommend the book by Clough[92] which though a thoroughly practical manual is itself a delightful example of binding which will grace the shelves. For those concerned with the technical aspects of the preservation of documents there is the textbook by Langwell[93].

The information department is often responsible for the production of the publications of its parent organization, and consequently information officers are interested in the literature on the writing of reports and their preservation, and on the literature of printing. AGARD produced a standard for the layout of reports[94], Kobe discussed the writing of a report[95], Richardson wrote for the British Standards Institution a discussion on the preservation of experimental data[96] and the U.S. Department of Agriculture issued a guide on the presentation of statistics[97]. The literature on printing included a book by Lewis[98] mainly concerned with illustrations, a guide to the selection of type faces by Dowding[99], and a paper by Phillips[100] on printing mathematical matter.

Translation is another question that is usually the responsibility of the information department. All the problems raised by technical translation are fully discussed in the report prepared for Unesco by Dr. Holmstrom[101]. Recent years have seen the rise of a number of publications and agencies for the recording of existing translations to prevent duplication of work. Two directories of these, both somewhat imperfect, were produced for AGARD[102] and the National Library of Medicine[103] respectively. The Library of Congress issued a useful list of Czech and Slovak abbreviations[104] which should prove useful to both translators and librarians.

One important new library periodical was produced as a result of the reorganization of the American Library Association. The Division of Cataloging and Classification and the Serials Round Table were merged into the new Resources and Technical Services Division, and their respective publications, the *Journal of Cataloging and Classification* and *Serial Slants*, were replaced by *Library Resources and Technical Services*[105]. This fully maintains the highest standards of its predecessors, publishing much original research in the subjects it covers.

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UNITED STATES INFORMATION SERVICES TO INDUSTRY IN THE UNITED KINGDOM

BY MARGARET HAFERD

Librarian, American Library, London

Aslib Scottish Branch Conference, Edinburgh, 7th February 1958

AS special librarians and information officers, most of you are, of course, very often required to obtain information on conditions and developments in other countries, among them the United States. In this brief paper I want to mention some of the information services of United States Government agencies represented in Great Britain, and to describe those which members of this Association may find most useful.

Until recently most governments considered it quite sufficient to have their public business abroad handled by diplomatic officers who carried out the traditional functions of negotiation and reporting; or consular officers who issued visas or looked after the occasional American who needed help or protection.

These officers also 'represented' their country's views to a somewhat wider audience in the sense that they 'presented' them to government officials or leading private citizens whom they met formally or informally. Once in a while the Ambassador or Consul-General made a statement on a public or semi-public occasion, but beyond that no attempt was made to supply information in the host country. Nor was there felt to be any particular necessity to do so.

However, as commerce and communications between countries expanded it became clear that further exchanges at other levels were required, and accordingly officers with more specialized tasks were attached to diplomatic missions.

Today these attachés and attached missions are considered an integral part of any country's representation abroad. For example, Great Britain has in the United States not only the usual diplomatic officers and attachés but also a number of special missions, such as the United Kingdom Scientific Mission, the Board of Trade Overseas Mission, the British Information Services, the British Holiday and Travel Association, etc.

The United States, too, has representatives of many official government agencies attached to its Embassies abroad. In the Embassy in London alone there are a Civil Air attaché and a Civil Aeronautics attaché. There are a Labor attaché and a Shipping attaché. And, of course, there are Army, Navy and Air attachés, not to mention the Press attaché and the Cultural attaché. Until recently there was even a Weather attaché. Indeed, if one were to become slightly *détaché*, it would be little wonder.

From their titles one can readily guess the nature of the duties of most of these officers. By tradition their primary concern is to represent and promote American interests abroad, and to report to their offices in the United States any developments abroad which may affect those interests. For many years that was their sole concern.

For example, formerly the Commercial attaché negotiated trade agreements or reciprocal concessions. He also investigated alleged unfair trade practices, promoted licensing agreements or noted investment opportunities. His duty was plain—to provide economic and commercial intelligence for American business men, and to negotiate favorable conditions for American exporters or investors. His clientele was wholly American.

Today, however, the scope of his duties has been enlarged, and he provides nearly as much help to business or industrial concerns abroad as he does to those in the United States.

As information officers of many business concerns, it may interest you to know that the office of the Commercial attaché in London maintains a good-sized collection of trade directories, catalogs and brochures of all kinds representing many different business firms in the United States. There are also special files containing names of British firms seeking markets or other commercial contacts in the United States and similar files for American firms seeking opportunities in Great Britain.

This office also deals with questions on licensing arrangements, copyright clearance or trade-mark registration. It will attend to complaints of unfair or fraudulent practices involving American firms.

Any interested person or firm in Great Britain is invited to apply to the office of the Commercial attaché if information relative to an actual commercial contact with some American organization is required.

Another office whose services are often useful to people in Great Britain is that of the Agricultural attaché. Although, as one can imagine, this office is chiefly interested in farm produce or agricultural commodities, it also has available bulletins on such diverse subjects as insecticides, commercial fertilizers, meat inspection, horse breeding, farm ponds, ice-cream production and the preservation of butterfly wings. Any firm engaged in serving or preserving foods, or in building a better mouse-trap, may seek its assistance.

I shall not elaborate on the variety of services occasionally available from offices of the other attachés, but I would mention in passing those of the Science attaché and the office of Naval Research. Both these offices have often been very helpful in obtaining documents for research organizations in this country.

As you will have noted, all of these offices not only serve American interests in Great Britain but are very often able to help someone in Great Britain with information from the United States. I now wish to turn to the agency whose sole concern is providing information on the United States to persons abroad. I refer to the United States Information Service.

The U.S.I.S. is an outgrowth of the Office of War Information which was formed during the war and which opened a library and press information center in London late in 1942. Then it was chiefly concerned with facilitating the flow of information from the United States in wartime. It served the press and others engaged in explaining the Allies to each other and in combating Nazi propaganda.

When the war ended it was thought that this office would no longer be needed, and in 1947 it was closed, as it happened, for only a few months. The development of the cold war, the inauguration of the Marshall Plan, together with difficulties arising from currency restrictions, etc., caused our Government to reconsider the position, with the result that the Service was revived; but with a change in emphasis.

The scope of the Information Services is broad and its policy flexible. For example, last year one of our officers was obliged to plant a primrose sent from California to a group in London; and annually someone goes to represent the United States at the ladies' pancake race at Olney. All through the night our duty editors keep a watch for official messages from Washington which should be relayed to Fleet Street and Whitehall, and every day someone has to reply to scrawls from dozens of schoolboys who are 'writting an essay on airplanes or cotton'.

This Service may mount an enormous exhibition or show a film; it may assist an artist or a musician, lend a jazz record, or look up complicated background literature on any one of hundreds of subjects.

But the chief demands on it come from journalists, news analysts, government officials, and industrial or labor leaders. Other queries come from students, lecturers, teachers, and of course authors, actors, designers, engineers and technicians.

Two aspects of the service would seem to be of predominant interest to members of Aslib: the Press services and the Library services.

Besides texts of official speeches, etc., the Press section provides a fortnightly publication called *Atoms for peace digest*, which may be obtained free of charge by any interested person. It digests recent developments in industrial application of atomic energy. Another publication which may be of interest is the *Labor news*, a mimeographed digest of recent American developments in industrial relations and labor economics, such as automation, wage plans, etc. Although these publications are intended primarily as backgrounders for the technical or industrial press, they can be useful to anyone in relevant fields of industry.

The Library Services provide information on all aspects of life and developments in the United States, but emphasize those dealing particularly with our cultural, political and economic life.

I wish to mention particularly the special collection devoted to industrial economics, business and technology. This section of the Library has about 5,000 books, nearly 20,000 pamphlets and receives about 350 industrial or technical periodicals regularly. Back numbers of periodicals are kept on file whenever it is thought they will have some use. Books and pamphlets are lent freely to anyone in Great Britain; but periodicals are lent only by special arrangements, and usually only when no other source of information is available. Photocopies of articles are provided when necessary. Inquiries are dealt with by post or telephone, but many people prefer to call in. The Library is open to the public Monday to Friday from 9 a.m. to 6 p.m. and on Saturdays from 12.30 p.m. to 4.30 p.m. There is no charge for the service except return postage on books borrowed by post.

Although a good collection of reference books, indexes, etc., is maintained, the Library tries not to duplicate services already adequately provided by British institutions, resting content to act as a kind of liaison between the inquirer and such agencies when necessary. For example, publications of the United States Atomic Energy Commission are available from Harwell or the public library in Sheffield, both of which act as official depositories. The PB reports of the Office of Technical Services are available from the Department of Scientific and Industrial Research, and the reports of the Bureau of Mines from the Fuels Research Station at Greenwich. We do not therefore hold heavy files of these publications.

The scope of the collection, and its service, are not limited, except by the demands or changes in needs of our clientele. When the collection was established in 1951 it was thought that the emphasis would be on science and technology. This proved not to be the case. Rather, the great demand was for economic data from the United States as provided by official and non-official sources, and for information on labor policies and industrial relations. Demands for new ideas in marketing, advertising, packaging, or product design are ever-increasing. There is much interest in American business methods and management problems; and lately there has been a great demand for information on technical and scientific education in the United States.

I may perhaps just mention briefly the other aspects of the Library services, for, far-fetched as it may seem, some of them interest industrial firms.

We have a very good collection of books on American government and politics; a representative collection of books on American history and literature, the arts and humanities, and even some children's books. The latter have served as a gold mine to designers of pottery, toys and fabrics for export to the United States.

The Library has a good collection of recordings and scores of American music, and it has been known that some information officers borrow these. We are able to provide limited guidance to those travelling to the United States for business or pleasure.

As can been seen from these remarks, our service seeks to assist in any way it can.

People often protest that this is far too generous or altruistic an outlook. I hasten to reply that we do not act from a position of unadulterated altruism. Rather, as a former officer of Economic Affairs put it:

'Promotion of the general welfare of the United States, which is, of course, the primary function of all of our overseas representatives, now requires, among other things, the promotion of the welfare of other people.'*

As one information officer to another, I appeal to you to consider the importance of our obligations in this new world, now rapidly extending itself to other realms; as the representative of one country in another, I beg you to make the best use of the facilities provided, first to better the understanding between our two countries, and ultimately among all nations.

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* John Lindeman in the *Representation of the United States abroad*, published by the American Assembly, Columbia University, 1956, (pp. 49-50).

BRITISH UNION-CATALOGUE OF PERIODICALS

THIRTEENTH ANNUAL REPORT OF THE COUNCIL FOR THE YEAR ENDED 31ST MARCH 1957

THE second volume of the *British Union-Catalogue of Periodicals* was published on 21st November 1956. This volume, covering the letters D–K, was delayed by nearly six months owing to the strike in the printing industry.

This delay, however, gave more time for editorial work on the remaining volumes. Volume three (L–R) is now in an advanced stage in proof, and is due for publication around June 1957. The printers are now engaged on the fourth and final volume.

A change of printers took place after the completion of the second volume. This occasioned a further delay on the technical side of the work, but the task of setting our complicated and exacting material is now proceeding most satisfactorily. The reception given to the published volumes has been most gratifying in its appreciative unanimity.

The volumes so far published have proved so useful in libraries of all kinds that a strong demand has arisen for the continuation of the work by supplements. We are fully conscious of this need, and have under urgent consideration ways and means whereby the *British Union-Catalogue of Periodicals* may be continued beyond the end of the current year. We share with users the desire that the work shall not come to an end with the publication of the fourth volume.

The Council suffered the loss of two of its members during the year. Miss C. M. Pollock, who represented the British Council, resigned on taking up an appointment abroad; and Mr. John Wilks, who represented the Joint Standing Committee on Library Co-operation, resigned after serving on the Council since its formation and for a period holding the office of Honorary Treasurer.

Our thanks are due to Miss Pollock and Mr. Wilks for the valuable service they have given us.

Our grateful thanks must be given to the Trustees of the British Museum for continuing to provide us with the accommodation and facilities so necessary to our work; and to members of the staff of the Department of Printed Books who have given much valued assistance.

Our thanks are also due to the Editor and to Miss M. E. Hammond, Chief Cataloguer, and Dr. E. Saenger, Cataloguer, who have now been working for a long time under continual pressure to make the Union-Catalogue an effective major work of reference.

[NOTE. We are pleased to be able to say that, since the above Report was issued, arrangements have been made for the continuation of BUCOP on a permanent basis.

Details of these arrangements will be announced shortly.]

BRITISH UNION-CATALOGUE OF PERIODICALS

INCOME AND EXPENDITURE ACCOUNT YEAR ENDED 31ST MARCH 1957

1956 £	1956 £		£	s.	d.	£	s.	d.
		INCOME						
	2,000	Advance on account of Royalties from Butterworth & Co. (London) Ltd.				2,250	0	0
		EXPENDITURE						
25		Administrative Expenses	25	0	0			
2,189		Salaries	2,326	11	8			
35		Field Work	39	14	0			
39		Travelling and Conference Expenses	25	0	0			
11		Editorial Expenses	20	2	2			
3		Audit and Accountancy	3	3	0			
3		Sundry Expenses	14	15	7			
	2,305					2,454	6	5
	£305	DEFICIT FOR YEAR carried down				£204	6	5
	305	DEFICIT FOR YEAR TO 31ST MARCH 1957, brought down				204	6	5
	430	LESS ACCUMULATED SURPLUS brought forward at 1st April 1956	125	7	9			
	—	*Less unexpended portion of Rockefeller Grant* at 31st March 1956 refunded	11	15	6			
						113	12	3
	(*Surplus*) 125	DEFICIT AT 31ST MARCH 1957				90	14	2
		Financed as follows:						
91		*Sundry Creditors*	90	16	0			
216		*Less Cash at Bank and in Hand*		1	10			
	£125					£90	14	2

We have examined the above Income and Expenditure Account with the Books and Records of Aslib and certify that it is correct and in accordance therewith.

29 John Adam Street, Adelphi,
London, W.C.2.

Reynolds, Adams & Lake,
Chartered Accountants

28th February 1957

SELECTIONS FROM THE RECENT LITERATURE

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A manual for the engineers, [by] Eleanor B. Gibson. Syracuse, N.Y., the Library, 1956. viii, 83 pp. plans. diagrs. mimeographed.

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The planning of international meetings. Oxford, Blackwell, 1957. 113 pp. *7s. 6d.*

Davison, George H.
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Data processing by electronics: a basic guide for the understanding and use of a new technique. [New York], Haskins & Sells, 1955. 113 pp. diagrs.

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You & faster reading. [Baltimore, Ottenheimer], 1957. 56 pp. $1.

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Saunders, W. L., *and* Furlong, Norman
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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given by the Librarian.

NEW MEMBERS

Corporate

A.T.S. Co. Ltd.	Mrs. B. Garratt
Australia. Mental Hygiene Authority's Central Library	Librarian
Bristol. University. Department of Agriculture	P. R. Colegate
British and Commonwealth Shipping Co.	Miss P. L. Erskine
British Moulded Plastics Limited	D. S. Stephens
Brocklehurst-Whiston Amalgamated Ltd.	V. Castle
Carus, Alexander, & Sons Ltd.	T. E. Thompson
Chiswell, Raymond, & Associates Ltd.	R. W. R. Chiswell
Department of Scientific and Industrial Research, Mechanical Engineering Laboratory	J. R. K. Pirie
Dowty Mining Equipment Ltd.	F. Pawling
Elsevier Publishing Co.	Dr. W. Gaade
Ferodo Limited	A. E. Butlin
Greening, N., & Sons Ltd.	N. MacGregor
Irish Management Institute	P. Dillon Malone
Keymer, D. J., & Co. Ltd.	G. F. Meadmore
Martech Consultants Limited	H. J. Novy
Ministry of Agriculture, Fisheries and Food	D. E. Gray
Muntz, Alan, & Co. Ltd.	P. Watson
North Lindsey Technical College	F. C. Jones
Nuclear Power Plant Co. Ltd.	Miss C. Henderson
Parker, Frederick, Ltd.	K. J. Parker
Peebles, Bruce, & Co. Ltd.	A. Abraham
Plastics Institute	J. N. Ratcliffe
Scottish Television Limited	Miss M. Tedder

ASLIB CALENDAR

APRIL

TUESDAY 29th. Northern Branch meeting. See paragraph below.

TUESDAY 29th–WEDNESDAY 30th. Course on work with patents and patent law.

MAY

TUESDAY 13th. Northern Branch meeting. See paragraph below.

TUESDAY 20th. Second conference on Business Records.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference at Nottingham University.

New Headquarters

Arrangements have now been made for the purchase of No.3 Belgrave Square, London, S.W.1, as headquarters of Aslib. This property, which was the home of the Duke and Duchess of Kent in the early years of their marriage, stands in a most accessible part of London near to Hyde Park Corner and provides between three and four times as much floor space as is at present available to Aslib in Palace Gate. Plans have been made for the further development of Aslib's activities in the new property: these will include the recruitment of a small research staff, the establishment of an exhibition of equipment useful in library and information work and the extension of the Aslib library to serve not only as a special collection on librarianship and information work, but also as an instrument for the demonstration of special library techniques and for the testing of library equipment. It is hoped to occupy the new premises towards the end of May.

The price paid for a seventy-seven year lease of the property is £46,000, at a ground rent of £500 per annum. This is a direct lease from the Duke of Westminster's Estate. To furnish the house and to meet the cost of legal and other fees and certain works required to conform with L.C.C. Byelaws, a further £12,000 will be needed, making a total of £58,000. The response to Aslib's appeal for funds to meet the cost of the building has been most encouraging. Donations, together with a grant from the Department of Scientific and Industrial Research and reserves built up over the past five years, now amount to £46,800, thus a further £11,000 are still needed to complete the fund. It is hoped to achieve this total before the end of 1958, so that a series of Open Days and other celebrations of the occupation of the property can be held in the early spring of 1959, with the property already furnished and equipped appropriately for the work on which Aslib is engaged.

Scientific and Technical Translation Conference

More than two hundred delegates attended this conference held in London on 5th March, including representatives of the Fédération Internationale des Traducteurs, Union Française des Organismes de Documentation, Zentralstelle für Wissenschaftliche Literatur, the Institute of Linguists, Gmelin Institut, and N.V. Philips Gloelampenfabrieken. The conference papers and discussions which followed their presentation will be published in the May and June issues of *Aslib Proceedings*. One result of the conference has been the suggestion that Aslib should form a group to be concerned with the problems of technical translation and any member who would be interested in such a project should write to the Director, Aslib, 4 Palace Gate, London, W.8.

Midlands Branch

The Annual General Meeting was held on 6th March in Birmingham. The following committee was elected: Chairman, H. H. Goom; Vice-Chairman, J. H. Bennitt; Hon. Secretary, E. H. C. Driver; Hon. Treasurer, B. M. Bland. Members: K. Boodson, B. P. Hancocks, Mrs. P. I. Lewis, R. N. Lock, Miss K. Mallalieu, A. Nicholls, G. A. Shires, Mrs. S. M. T. Stone, D. R. C. Whale.

After the meeting members joined with the Presentation of Technical Information Discussion Group, Midlands, to hear a paper on the problem of communication by Mr. Harvey Cole, a member of the editorial staff of *The New Scientist*. He began by recalling Thistle's law of incommunicability and went on to emphasize that information must be communicated to different classes of readers in different ways. The value of a technical article depended on the proportions of technical information and useful detail that it contained. These proportions could be varied for different readers. An article in a trade journal might contain a high proportion of technical information but comparatively little detail, while a report to a company executive on the same subject would contain considerable useful detail but little technical information. Mr. Cole illustrated his paper with examples from his own experience and the problems were further considered in discussion.

Northern Branch

A meeting will be held at 7 p.m. on Tuesday 13th May in the Lecture Room of the Manchester Central Library for the purpose of bringing together librarians and information officers interested in the study of classification, and of finding out whether there is sufficient support in the north of England for the formation of a classification study group. The speaker will be Mr. B. C. Vickery, M.A., Hon. Secretary of the Classification Research Group in London and Librarian, Imperial Chemical Industries, Akers Research Laboratories. He will give a general review of the work of the Group and discuss some of its problems and plans.

An open meeting will be held on Tuesday 29th April at Joseph Cowen House, Newcastle upon Tyne. Mr. T. Walton, A.L.A., will speak on 'information for trade and industry: the work of the Newcastle Commercial and Technical Library' and the Director will give a survey of Aslib activities. On Wednesday morning delegates will have the opportunity of visiting the Commercial and Technical Library, Messrs. Thomas Hedley & Co. Ltd., and the

Literary and Philosophical Society, Newcastle. Hotel accommodation can be arranged for those requiring it. Application should be made immediately to the Branch Secretary, Miss E. Boddy, The Retreat, Tideswell Lane, Eyam, near Sheffield.

Textile Group

There was a disappointingly small attendance at the Annual General Meeting which was held on 4th March in London. Mr. Graham Craig, Editor of *Fashions and Fabrics*, spoke on 'Why people buy periodicals', giving some interesting sidelights on the fashion trade. He discussed the way in which information is garnered, treated, and presented; readers' requirements and prejudices; and the trend towards even greater specialization in magazine publication.

Film Production Librarians

At a meeting of the Film Production Librarians held on 5th March, Mr. Leslie Ostinelli of George Humphries Film Laboratories spoke on laboratory techniques in general. He emphasized the great care that must be taken in order to get the best results at all times from the different printing processes, described the methods used to preserve colour negatives by lacquering, and gave an interesting account of the experimental printing process for eliminating scratches and abrasions on old film material. Mr. Ostinelli also referred to the rapid progress being made in dealing with 16mm film, the improved system of printing on reversal stock, and the method of A and B printing used for making opticals on the final print in colour work. Finally, he invited a party of film production librarians to visit the George Humphries Laboratories at a future date to see the equipment that he had described and the various systems in operation.

Aslib Directory

Aslib Directory: a guide to sources of information in Great Britain and Ireland is now available. The work, published in two volumes, comprises a directory of libraries and information services, with indexes arranged by UDC classification, by alphabetical list of subjects, by names, and by geographical regions. Each entry gives such details as lending facilities, scope of library, stock, periodicals, classification used, periodical articles indexed, and other information concerning translation, photocopying services and equipment, branches, and publications. The price is £5 to members, 6 guineas to non-members, postage and packing 5*s*.

Indexing Service on Patent Law

A new mimeographed monthly publication on patent law, *Literaturblatt für gewerblichen Rechtsschutz*, has been announced. It is international in scope and covers all questions concerning patent and trade mark law and allied subjects, including reports of cases. Abstracts are not given but there are very brief annotations, mostly explanatory of the titles. The annual subscription is DM 84 plus DM 8 for author and subject indexes. Inquiries should be addressed to Heinz J. Engelke, Informationsdienst für Gewerblichen Rechtsschutz, München 23, Siegfriedstrasse 8, Germany.

Library of Congress Russian and East European bibliographies

The Library of Congress have announced that the title of their *Monthly List of Russian Accessions* will be changed to *Monthly Index of Russian Accessions* and that of the *East European Accessions List* will be changed to *East European Accessions Index*. These two important publications give translated titles not only of books and pamphlets received in the Library of Congress from the countries concerned, but also of important articles from the journals received. They are provided with detailed subject indexes and form valuable keys to the literature coming from behind the Iron Curtain. They are published by the U.S. Government Printing Office at $15 and $12.50 per annum respectively for overseas subscribers and can be obtained through H.M.S.O.

Books on Approval

Books published by McGraw-Hill are now available on ten days' approval, with no obligation on the part of the inquirer except to return them in good condition, postage paid, if it is decided not to buy. This scheme should aid efficient book selection and reduce demand on inter-library loan services. Books may be obtained direct from McGraw-Hill Publishing Company Ltd., McGraw-Hill House, 95 Farringdon Street, London, E.C.4, or through a bookseller.

International Federation for Documentation

Members may be interested to know that they can become Associate Members of F.I.D., of which Aslib is National Member for Great Britain. Associate Members receive a free copy of each issue of *Revue de la Documentation* and *Informations F.I.D.* and are entitled to a discount of 20 per cent on other publications issued by the General Secretariat. The subscription is 25 Dutch guilders (£2 10*s*.) for individual members and from 50 Dutch guilders (£5) for corporate members. Application should be made direct to the General Secretariat, Fédération Internationale de Documentation, 6 Willem Witsenplein, The Hague, Netherlands.

Vacation Course in Russian

It is intended to hold a vacation course in Russian for scientists at the University of Birmingham during the latter half of September. It will cater for both beginners and more advanced students of the language. The advanced teaching will be given in three specialized groups: mathematical-physical, chemical, and biological. For further details application should be made to Mr. G. R. Barker, M.A., M.COM., Faculty of Commerce and Social Science, The University, Edgbaston, Birmingham.

Philadelphia Appointment

Haverford College wishes to appoint a young trained librarian with skill in cataloguing for work in the college library during the coming year. Haverford is a small men's college (450 students) near Philadelphia. The library has a collection of about 210,000 volumes and a staff of eleven. Applicants, preferably women, should write direct to the Librarian, Haverford College Library, Haverford, Pa.

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TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

ASSISTANT LIBRARIAN (female) required for abstracting. Applicants must have a degree in chemistry; good reading knowledge of French and German required; experience in library work or abstracting would be desirable, but not essential. Permanent post, hours 9 a.m. to 5.30 p.m., Monday to Friday. Apply initially in writing, quoting reference No. 30, to the Personnel Officer, May & Baker Ltd., Dagenham, Essex.

THE IMPERIAL COLLEGE OF TROPICAL AGRICULTURE, TRINIDAD, B.W.I. LIBRARY AND PUBLICATIONS DEPARTMENT. ASSISTANT LIBRARIAN. Applications are invited for the post, vacant at the end of September, of Assistant Librarian in the Library and Publications Department, The Imperial College of Tropical Agriculture, Trinidad, B.W.I. Candidates must hold the A.L.A. or an equivalent library qualification and some preference will be given to those holding a university degree, particularly in agriculture and/or science. A knowledge of languages, especially Spanish, would be an additional advantage. The salary will be in the scale £800 × £40—£1,000 × £50—£1,150, the point of entry depending on qualifications and experience. Application forms and further details may be obtained from the Secretary, The Imperial College of Tropical Agriculture, 40 Norfolk Street, London, W.C.2. Applications should be returned not later than 26th May 1958.

LIBRARIAN-INFORMATION OFFICERS with scientific interests are invited to apply for a post which has occurred in the Research Department due to existing services being reorganized to serve Engineering, Production and Research. Applicants should preferably be Chartered Librarians (either sex) between the ages of 26–36 and have had experience in a technical library. Knowledge of languages would be an advantage. Good salary will be paid in accordance with age, experience and qualifications. A Superannuation and Life Assurance Scheme is in operation. Five-day week. Please write giving full details of age, training, experience and qualifications to the Personnel Officer, Ericsson Telephones Limited, Beeston, Nottingham.

PHOTOCOPYING. GLAXO LABORATORIES LTD. require staff in the Document Copying Section of their TECHNICAL LIBRARY. There are two vacancies, the senior of which demands experience in modern copying methods with some knowledge of photography, and is suitable for a woman over the age of 21. The second vacancy for an Assistant is suitable for a younger girl and here experience of such work would be highly desirable but is not essential. It is important in both cases that applicants have a preference for practical as opposed to theoretical work. Commencing salaries will be fitted to age and experience and conditions of employment are excellent, including a five-day week, cafeteria, pension and incentive bonus schemes. Apply in writing to the Personnel Officer, Glaxo Laboratories Ltd., Greenford, Middlesex.

TRAINED LIBRARIAN to organize and provide services associated with the Technical Library of an engineering company, with particular emphasis on chemical and engineering departments and with possible extension to other departments later. The Library is in the Company's Research and Development Division which is situated in a large country house in Warwickshire, within easy travelling distance of Birmingham and Stratford-on-Avon. Wilmot Breeden Ltd., Camden Street, Birmingham, 1.

Wanted

British Medical Journal, February 1, 8 and 15, 1936. *Journal of the American Medical Association*, June 1, 1957; July 27, 1957; and August 31, 1957. Offers to The Library, Genatosan Limited, Derby Road, Loughborough, Leics.

C.B.I. 1928–32, 1933–37, 1938–42, 1943–48. *English Catalogue of Books* 1901–5, 1906–10, 1921–25. Replies to the Borough Librarian, Central Library, High Street, S.E.13. Telephone LEE Green 0438.

Trans. ASME, vol. 70, 1948; 71, 1949; 72, 1950. Willing to buy. Write Librarian, Babcock & Wilcox, 209 Euston Road, N.W.1.

For Sale

Institute of Petroleum Journal/*Review*, Jan. 1947–Dec. 1957. Clean, suitable for binding. Best offer over £12. Apply Box 1, Aslib, 4 Palace Gate, London, W.8.

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THE ORGANIZATION AND AVAILABILITY OF TECHNICAL TRANSLATION

BY A. L. MACKAY, M.A., PH.D.
Birkbeck College

Scientific and Technical Translation Conference, London, 5th March 1958

DIFFICULTIES have been experienced with translation from the earliest times. When I was about eight years old I first met a remarkable paradox. Methuselah was the oldest man in the Bible, yet he died before his father—how could this be explained? The answer is given in the Epistle to the Hebrews and is that Enoch, Methuselah's father, did not die but was translated. It says, 'And he was not found, because God translated him'.

As the details of translation will be discussed later today, I want to adopt, at the risk of being over-obvious, a fundamentalist approach. Not being a professional documentalist, I hope I can look at the process of translation from the outside and give a number of proposals as to the principles of the organization of translation, followed by a very brief account of the existing organization of translation activities coupled with some suggestions as to where actual improvements might be possible in the contemporary situation.

As the Unesco report, which has just been commended to you in the programme of this conference, gives almost all the facts anyone might want, the proportion of comment to fact in my paper will be higher than usual.

I see with some regret that the Washington Conference in November on Scientific Information is not to be concerned with language barriers, but I trust that some of those present who may be attending that conference will acquire, from the discussions later today, some general opinions which they may be able to use at this Washington Conference.

My 'back to Methuselah' approach is meant to make sure that, if assumptions are made about translations, they should not be unrecognized even if they are allowed to go unquestioned.

My first principle is that *a translation acquires no merit by the mere fact of being a translation.* Unless it fulfils further requirements it is no more good to anyone than a completed crossword puzzle. We are, of course, only concerned here with scientific and technical texts, but this applies also to literary productions. *What a translation provides is information* which would not otherwise be recognizable because it is in a foreign language. Everything suffers by translation, except a bishop, and it is obvious that a translator who does not completely understand the subject of his work cannot add to the clarity of the language in which the information is conveyed and may indeed easily ruin the argument. Scientific papers today, because of the pressure of space, make few concessions to the uninitiated, and some are downright obscure. Many papers are intended only for the hundred or even for the ten other people in the world who are working on the same subject and it is very unlikely that a regular translator would appreciate them. Moreover, my private suspicion is that there are quite a significant number of papers which are only trivia or even nonsense decked out in words and formulae, but one would have to be right on top of the subject to decide this in any particular case. The problem of translating nonsense is really extremely difficult but I do not think we should waste time on it.

The second principle is that *only a small fraction of the information in a translation is wanted by a particular person.* Most commonly a paper, especially a technical paper, is read to confirm that there is nothing new in it. Often only a few figures or experimental measurements are all that is needed from it and it must be very rare that the whole paper is material new to a reader experienced in the relevant subject. The inquirer who, wanting information which he suspects may be in a particular paper because he has seen an abstract, cannot say exactly what he wants until he has read the paper. It follows that far more than is necessary has to be translated. Information is essentially the unexpected; if you know exactly what is coming, then you learn nothing. Translation on this basis is therefore most wasteful of skilled labour. There are two ways of mitigating this inefficiency: (*a*) the translation can be circulated very widely so that many parts of it are useful to many people who can all share in its cost; and (*b*) the translator and the inquirer can be made the same person by *either* teaching the inquirer the relevant language, *or* by making the translator a responsible intelligence officer charged with research on a problem but using a library rather than a laboratory as a working place. Both these approaches are the main subject of our discussions today, but I had better warn you that the second approach is the one I will canvass when we get down to practical propositions. A variant way of combining translator and inquirer is to let the translator lead the inquirer through the paper like a guide dog for the blind, taking his master up to the kerb and waiting to be told whether to go on or to turn right or left. For unusual combinations of languages and subjects this is often the only way.

I have excluded from consideration the problem of the translation into a foreign language of patents, instruction manuals and the kind of thing where what is wanted is not information but a canonical text. The requirements here are so stringent that the problem is reduced to one of finding the person capable of the necessary high standards because the penalties for bad work may be very serious. I think we might also exclude conference interpreting on the same grounds.

It is worth making a third special principle of the simple statement that *translating is difficult, but abstracting is more difficult.* To abstract, one must know both the subject and the language and must oneself be actively interested in the field. Even so, the comprehension of what an author means when he tries to present ideas and observations which the world has never seen before may seriously tax the specialist referees, let alone an abstractor. In making a full translation a lack of understanding of the subject can be masked by a good command of the technical terminology and the result may be quite satisfactory, but this will not be so with an abstract. Elsewhere I have been in a minority when suggesting that authors' abstracts, of a standard warranted by the referees and the journal editor, should be printed with every paper and widely used by abstracting journals to save the labour of skilled manpower. The author at least should know what he has tried to say even if he cannot assess its value to the subject. Abstracting, even in one's own language, is hard work and compared to non-scientific or quasi-scientific professions not overpaid.

My last principle now follows from the foregoing, and is that *only worthwhile material should be chosen for translation.* I can illustrate how this choice might be made by borrowing from physics and assigning a half-life to each type of documentary material. After any period of time equal to its half-life the value of the material is halved. For example, if we give a daily paper a half-life of one day, then twenty-four hours after publication its value has decayed to one-half of its value new, after a week it is only worth 1/128th, and after the two weeks it might take us to translate and republish it, it would only be worth 1/16,000th. To a paper in a research journal we might give a half-life of a year, so that if it were translated and republished six months later it would still be worth about 70 per cent of its original value. A really good review in a subject like botany, where things do not get out of date as quickly as they do in physics, might have a half-life of about five years and after one year would still be worth about 87 per cent. The rate of decrease in value as a whole could probably be related to the overall increase in the volume of scientific publishing which is doubling about every ten years.

At present, when the authors of scientific papers are not paid, but when the translators of these papers have to be paid, albeit modestly, it follows that translated periodicals, especially as they may carry little advertising matter and will probably have a smaller circulation, will be more expensive than the originals. An article in Russian, for example, has to be perhaps five times as valuable, on an average, as an article in English, before it is worth translating. However, I expect that all these considerations will be quantitatively considered in our paper on economics.

I would like to sketch out very roughly what we might aim at in the field of translation. The main problem at present, as I see it, lies with Russian material and I do not think it would do much harm to concentrate our attention on this, to the exclusion, initially at least, of all other languages. I assume, too, that no major reorganization of scientific publishing methods is practicable as far as we are concerned, although the Washington Conference may achieve some reforms. As we are not the only English-speaking country, we are, in this as in other matters, under the shadow of the United States and have to consider activities in America as well as here.

Firstly, the auxiliaries to translation, the abstracting journals and the translated contents lists as far as Russian goes, are satisfactory and perform an invaluable service. The only suggestions which can be offered here are not very helpful and amount only to 'fuller and faster' without suggesting how these objectives might be achieved. We note that the translated contents lists of Russian journals published by the Library of Congress and by D.S.I.R. overlap to a considerable extent. Apart from the information on its translation scheme which the D.S.I.R. list provides it is difficult to see any point in which the British list (at £4 per annum) does better than the Library of Congress list (at 15 dollars per annum). There may be unnecessary duplication here. As the Americans have so much more money to spend on learning what the Russians are doing, might we not leave this particular job to them? Scientific abstracting is already shared between the two countries.

Secondly, I think the present trend towards publishing complete translations of the major Russian journals is a correct one and should be encouraged, *but,* and it is rather a big but, the economics of such journals need examination. If the prices of translated journals can be kept down to two or three times the cost of similar journals in English, then a number of problems, particularly those concerned with achieving a large circulation and of avoiding clandestine reproduction, will be avoided. I think that it was a very clever idea of one publisher to combine in one volume an English-language journal and a translation of its Russian counterpart. Possibly, however, some market research may be needed to estimate what the demand for complete translated journals might be. Nevertheless, the high price of translated journals which are not subsidized by government agencies concerns me, particularly as I understand that much of the translating work is done in Britain where a dollar goes twice as far. This high price may cut both ways as, for example, I see that a Russian dictionary, costing very little but out of print and now unobtainable, has been reprinted in America and sells here for some £3 10*s*. Suppose this happened the other way round and the Russians, as they are quite capable of doing, reproduced the American-compiled Russian-English dictionary which sells at 50 dollars and sold it for 10*s*. Surely it would be much better to aim at a large circulation and a low price rather than to shelter behind copyright laws. There is an item of recent news on which I think we ought to have a proper legal opinion. It is reported that the main American company publishing translated journals has concluded an agreement with the Soviet book-exporting agency Mezhdunarodnaya Kniga under which the company will have exclusive translation rights on certain Soviet journals. If the company is in fact able to substantiate these rights and obtain publication, for example, in Britain, then there will be serious repercussions in the translating business.

Now, I would like to develop my main thesis which is, that what is wanted by technical and scientific users is not full translations but subject reviews where all recent papers in a limited field are digested. I will call two items of evidence in support of this. *One*: At the Washington Conference the view is likely to be widely held that the original paper is no longer the major currency of scientific information but that it has been superseded by reviews, tables, handbooks, abstracts and digests. And *two*: If translators are capable of translating properly, then they are capable of far more than mere translation and should be better employed and correspondingly better paid. I believe that this low factor of utilization of experience is the explanation of the wide feeling by users that translations are ridiculously expensive and by translators that they are underpaid. The wide use of reviews should work to reduce the volume of translation both by involving only the translation of reviews prepared by local experts and, principally, the preparation by scientific information officers, skilled in the use of foreign languages, of reviews embodying material from many sources. I would like to get this view of the role of a translator, at least one employed by a large or moderately sized organization, as a sifter and digester of information accepted, because of what is implied. This is that a selector cannot select unless he knows what to accept and what to reject. He cannot do this unless he knows what his clients are trying to do, and have done and why they have done it. It follows that the information officer ought to take part in all day-to-day research conferences along with other research and development workers. We ought to regard an information scientist as no different from any other except that he has special skills in languages and in library technique rather than in various types of analysis. The key point is that he ought to participate in the research programme with the others. Many translators are content to sit behind a book stack translating what is given to them and not inquiring into what happens to the work they do. If there was one outstanding lesson of the war for science, it was that proved by the radar research establishment. Everybody had to have the fullest information about what they were doing and why they were doing it and all suggestions and opinions had appropriate opportunities for expression. It is not good enough to pose a closely circumscribed question to a scientist without giving him the opportunity to question the basic assumptions implicit in the particular formulation of the problem. I suggest that those concerned to improve the lot of the translator might think along these lines.

We should examine now the problem of finding whether the foreign paper which is wanted is available already in English translation. We need not consider books because there are standard methods, familiar to every librarian, for finding them, although the *Index translationum* of Unesco is perhaps worth mentioning. In short, for papers the answer is to ring up Aslib and ask, but for more details I ought to refer you to the Unesco report on scientific and technical translation which has already been brought to your notice. This contains a vast amount of information and opinion and supersedes most separate accounts of the field. However, some developments have taken place since the report was prepared making the translation indexing system more satisfactory, these arrangements are well in hand so that I doubt if pressure from us is necessary.

Most of the changes in progress are connected with the recent establishment of the D.S.I.R. Lending Library Unit which is to be the nucleus of the new National Lending Library for Science. The changes were under way before the Russian satellites were launched, although the presence of the latter should help to keep the Treasury up to the mark in financing this new library. As a matter of urgency the Lending Library Unit will concentrate on setting up a collection of Russian books, periodicals and cover-to-cover translations of Russian periodicals and in general repairing the alarming deficiencies in our national stocks. Other collections, mostly Japanese and Chinese, are expected to be started in a few years.

We have already mentioned copyright, but as it seems there are no practical restrictions on copying material printed in the U.S.S.R., the opportunity might well be taken to make imaginative and unrestricted use of photographic or xerographic methods as an alternative to lending the actual materials by post, which is now so expensive. Such an experiment, by its success or otherwise, should give a guide to what concessions of copyright scientific publishers might reasonably be asked to make.

The Lending Library Unit is making arrangements with the Special Libraries Association at the John Crerar Library in Chicago to obtain microfilms of their stock of translations so that the joint resources of Britain and America should be readily available. The S.L.A. and Aslib cover all languages, but those translations from languages other than Russian are probably scattered over such a wide field that I would doubt whether they were worth inquiring about.

There is an important question which I would like to bring to your notice when we come to the finding of Russian material to borrow. For about ten years the National Central Library has maintained a union catalogue intended to cover all the Russian-language material which is borrowable in this country. Through lack of funds it has not been able to cover the Science Library and a number of small collections, although most libraries are now included. The staff at present consists of only one person, who is able to do little more than deal with day-to-day inquiries. Now, although the new D.S.I.R. unit is buying as much current Russian material as possible, as it is published, it is very unlikely that it will be able to get much literature which has been published earlier because Russian books go out of print extremely quickly. Hence the R.U.C. will still be necessary for finding the earlier books and periodicals (which it can arrange to borrow from the U.S.S.R. if necessary). The new accessions of the D.S.I.R. unit are being incorporated into the R.U.C. as the unit catalogues them. It seems a pity that the R.U.C. should not become the main method of locating Russian-language material in Britain, as at less than 100 per cent coverage its efficiency is disproportionately reduced and it is not now so far from achieving the 100 per cent. It is true that the catalogue covers non-scientific as well as scientific material, but it was on the initiative of the Foreign Office, who were interested in the non-scientific material, that the catalogue was set up in 1947. The actual loans arranged through the National Central Library these days are overwhelmingly of scientific and technical material. The N.C.L. as an independent, voluntary subscription, state-aided organization, of the type so characteristic of British life, seems unlikely to be able to develop this catalogue, so it might be reasonable to suggest that the D.S.I.R. should do so, so that there should be only one index to borrowable Russian material. The European Productivity Agency, who have concerned themselves in this field, might also help. Perhaps this conference might be able to express an opinion on whether such development of a Russian Union Catalogue might be desirable. After all, if you have not got the original documents, you cannot translate them.

One of the factors not yet discussed in regard to translation indexes is speed. Suppose one receives a copy of a Russian journal and finds there is an article which requires translation. One knows for certain that the article will not be listed by Aslib or by any other index so that a fair sum can be saved on postage or telephone. If one consulted Aslib later on, then for every translation found there would be about twenty-five fruitless inquiries. It costs the same to have a new article translated as one six months old, and we have seen that after this time the article might have only 70 per cent of its original value. Aslib-indexed translations are always old—shall we say at least six months old?—so that if the value of the paper in the research is perhaps three times the cost of translating it, then it is always cheaper to do it at once than to wait six months and get it for nothing, as the loss by depreciation will be greater than the cost of the translation. Librarians forget more than others that in industry time is money and money time. For old papers translation indexes are obviously more useful and as a last resort justify themselves in preventing good work from going to waste through inadequate circulation. Personally I believe translation indexes are of only marginal value and their operation must therefore be as efficient as possible and the recent unification of indexes is clearly welcome.

We have disposed of other people's translations—the translation index and the completely translated periodical—suppose that you have to arrange a translation yourself. This afternoon's session will cover the problem of actually doing it, or training someone to do it, but I must mention some of the ways in which one can commission a translation. In the D.S.I.R. translated contents list a scheme is described whereby if two or more people apply to have a Russian paper translated the D.S.I.R. will arrange the translation and bear up to one-third of the cost.

Commercial translation agencies obviously vary enormously, but I am sure that everyone will know that Aslib already maintains a register of specialist translators and can often put an inquirer in touch with the person who has both the linguistic and the technical qualifications for a special job. The financial arrangements are, of course, privately negotiated and Aslib only performs the introduction. One of the recommendations on which your opinion is asked suggests the formation of similar registers elsewhere and their linking internationally. Perhaps the organizers of the Aslib index can give us figures but I would confidently expect them to report that the register was worth the expense and performed a useful service.

The Unesco report will give you a detailed picture of how translating is organized in Britain and in America. In the main translations are made by commercial organizations concerned with selling translations, by industrial companies who only incidentally produce translations and who are willing to give the translations away when they have served immediate purposes, and by governmental and para-governmental agencies who translate at state expense. Subsidies are often provided for commercial enterprises which are deemed to be performing a national service by, for example, translating certain Russian journals. On the whole the government and industry supply the money and the work is carried out in a wide variety of ways.. Since the realization of the extent of Russian technical progress large sums have been put into the study of Russian literature and activities. The general policy seems to be to produce indicative abstracts and to enable those interested further to acquire complete translations of the papers in question. Full translation rather than reviewing is encouraged. Although efforts to teach languages to science students are being increased (in America at least) the knowledge of languages (particularly Russian) is far from being widespread and much reliance is placed on *émigré* translators. I suspect that very few people in Britain or America in fact read Russian journals.

An account of how the translation system is organized in the U.S.S.R. might not be out of place here, because, while *we* could at a pinch manage without foreign literature, as half of the world literature is in English, for the Russians the translation problem is quite unavoidable. Until shortly after the war, translation and information services were rather haphazard, but now an enormous Institute for Scientific and Technical Information has been set up and is fully operational. The aim seems to be that, except for specialists, scientists should not need to consult the originals of foreign papers but should use detailed abstracts and reviews in Russian. While there is a large full-time staff, the bulk of the work has to be done by ordinary working scientists on a part-time basis. There are some 13,000 of them, most of whom must know some foreign language. The Soviet educational system requires one foreign language from almost all graduates, two from Ph.D. candidates and three from D.Sc. candidates. It is probably true that the Russian scientist's knowledge of languages is greater than that of his British and American colleagues and is only surpassed in certain continental countries. Numerous journals reviewing foreign work are published and an enormous number of foreign books are translated. An interesting feature is that major British and American journals, such as *Nature* and *Engineering,* are reproduced by photographic methods in editions of some thousands for internal circulation to save foreign exchange. Translations and other services in documentation are provided by the Institute.

The points to emphasize in relation to the Russian system are: the existence of a centralized, state-financed institute abstracting fully in all subjects and the enlisting of working scientists in the provision of documentary services.

Translating is essentially an unproductive type of work, which, but for the accidents of human development, ought not to have become necessary. As well as considering problems of how to translate, I think that this conference should also consider the question of how not to translate, or at least how to avoid translating. We can mention this merely under headings as I am sure the points will recur. Possible remedies of the situation might be:

(A) To teach a wider variety of languages in schools. French is really very difficult to speak properly and early troubles in learning it often lead to discouragement. Our concentration on French is now out of date and it should be possible to encourage more interest in languages by giving more choice. It might also be a useful move to make one language compulsory in universities for scientific and technical graduates. This requirement is still far from being universal in Britain but it should seem a reasonable requirement for a European citizen. Even if scientists did not eventually do their own translating a knowledge of the difficulties would enable them to understand the problems and get better results in their dealings with translators.

(B) In their final year at a university I think it would be worth while to set each science student the task, to take about a week, of searching the literature to find the state of knowledge in a small section of his subject. This would tend to produce a population of scientists more educated in the ways in which documentation works.

(C) On a national scale closer relations might be maintained with the sources of foreign-language information by having more men on the spot. If one looks through the diplomatic list one sees enormous numbers of naval, military and air attachés and very few scientific representatives. Part of the explanation may be that science attaché is not a recognized category, but I understand that Britain maintains only about five science attachés or their equivalents. There seems to be nobody in Moscow, for example, to deal with scientific affairs. The

United States has also let its scientific representation sink almost to vanishing point and is now engaged in repairing the situation.

Closer contact by the exchange of students and others would serve to build up a body of experts whose knowledge of the languages and local conditions of scientific work would be most valuable. I would have thought that some body such as the Federation of British Industries would have found that the ideas and technical information which it would pick up by having a technical representative in the U.S.S.R. would have been worth the maintenance expense. After all, there are plenty of Russians now visiting Britain on fact-finding tours. However, I am beginning to overlap on to the training field, and I think that the importance of personal contact with the originators of material which is likely to be translated should be stressed. The British Council, Unesco and other bodies responsible for foreign relations are of course working on this kind of exchange, but the particular problems of scientific translation might merit special examination. Translators ought to be familiar both with the actual sources of their material and with the uses to which their work is put if they are going to translate with real understanding.

(D) The choice of widely understood languages for scientific publication is a very obvious way of eliminating much translation and it is clear that English is the most widely used language. This puts us in a very difficult position and I think we should not propose the universal adoption of English, or anything like that, although of course if any foreign journals changed over to English we should be delighted. We ought to do our part in trying to understand our neighbours, and those farther away, and should not expect concessions from them.

To sum up: I think that most of our difficulties in the organization of the translation of scientific literature arise really from the lack of scientific education among those educated in the humanities and the lack of linguistic education among those educated in science. As I said, most universities do not demand any knowledge of languages from their graduates and postgraduates, and there are hardly any diplomats who know anything about science. Although there has been some improvement lately, science still means to governments today essentially what it meant when Leonardo da Vinci applied for a job with the Duke of Milan. He listed the various military engineering projects which he could carry out and added as an afterthought that he could paint as well as the next man.

Finally, I hope that the following paper on the economics of translation will form the bones of our discussion. The Unesco report, while it gathers an enormous amount of valuable opinion, shows how difficult it is to get quantitative estimates in this field. Even the simplest questions, such as 'How many scientists read papers in foreign languages?' are found to be extremely difficult to answer. In preparation for the Washington Conference Professor Ralph Shaw has produced a report on the reading habits of scientists which is really astonishingly like the Kinsey report. He took a typical research and development laboratory, discovered how many 'reading acts' took place there in a month and analysed these in enormous detail. In spite of elaborate calculations it is clear that such surveys are subject to large corrections in the light of common experience. For example, he finds that Finnish is one of the commonest foreign languages (because he chose the forest products laboratory). Rather than the Kinsey report, I think what is wanted is more the Arabian Nights—an imaginative account by documentalists of the enchanting services they could provide for scientists if only the latter were interested. When the interest is aroused, then the questions of L.s.d. can be broached and, if the economics are worked out carefully enough, the choice should be quite clear because scientists, having accepted premises, are expected to stand by the conclusions.

However, I have given you almost nothing but opinions so I trust you will find more meat in the remainder of the session.

ECONOMICS OF TRANSLATION

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Patents Information Officer, The Mond Nickel Company Ltd.

Scientific and Technical Translation Conference, London, 5th March 1958

I AM going to talk both as a user and a perpetrator of translations, since, in the Patent Department of the Mond Nickel Company Limited, the Information Section has to abstract and translate patents and other legal documents as well as technical and scientific articles from, and occasionally into, foreign languages. A large part of this work is done within the department but the incessant pressure, due to the necessity of working to definite dates—a very common problem in patent work—forces us to send out some work to outside translators. We have thus acquired a considerable store of experience on the economic or L.s.d. side of translation work.

I hesitate to talk about the L.s.d. side of translating, since I gather that it is considered unethical in the profession to disclose how much one charges or pays for translations. I have therefore tried to choose a relatively safe basis by taking the standard charges fixed by the Institute of Linguists at their 1957 Conference as the basis for this comparative study. I would hasten to add that these may run from 150 to 200 per cent more on top of the standard charges to make provision for technical or specialist work. Many of you will, of course, think that these charges are somewhat unrealistic and will compare them in your minds with, say, the rates authorized by the Treasury which are, I believe, a little bit lower. There are some translators who advertise widely in technical and scientific periodicals and who quote prices which are about 50 per cent lower than those of the Institute of Linguists (e.g. 25*s*. per 1,000 words for German into English). On the other hand, the rates mentioned in the recent Unesco book *Scientific and technical translating* represent a standard rate for translating, e.g. German into English of 0.87 U.S. cents per word (approximately 3 guineas per 1,000 words), which is higher than the Institute of Linguists' standard. If we thus accept the Institute of Linguists' standard as a norm and call it 100, the commercially charged rates for translating scientific and technical material seem to vary between 50 and 150.

I shall attempt to analyse the various methods by which translations are done and then compare their relative efficiencies. I have enumerated eight methods:

1. Straight translation on to the typewriter.
2. Dictating machines.
3. Oral translation.
4. Sworn translations.
5. Machine translations.
6. Outside translations.
7. Co-operative translations.
8. Manuscript.

Of the various methods of preparing translations, it is quite obvious that method (1), i.e. straight dictation on to the typewriter, is very economic for full translation, since it requires fewer intermediate stages than any other method. This method can actually be carried out in one stage and requires purely and simply the time of the translator and the typist.

2. *Dictating machines*

The economic side of using dictating machines for preparing translations is almost identical with the above method, since the time taken for the translator and the typist is approximately the same as that for straight dictation on to the typewriter. There are, of course, some qualifying factors in this context, namely, that the time taken by the translator to look up words in the dictionary (which we have to do sometimes) or to check some figures or references affects only his time and not that of the typist, since the dictating machine is just switched off during these hold-ups. Similarly, any outside interruptions such as telephone calls, etc., take up only one person's time and not that of two. Calculations made by my company have shown that a saving of about 50 per cent in a typist's time is effected by using dictating machines. The capital charge and amortization of the dictating machine are comparatively small, in spite of the fact that most machines of this type require two models for efficient working, namely, one for the translator and one for playing back to the typist. Assuming a capital outlay of approximately £200 per set of two machines and a useful life of, say, five years, this amounts to an approximate weekly cost of 15*s*. With an approximate weekly output of about 30,000 words of translation this represents an additional charge of 6*d*. per thousand words, which is almost negligible. I would therefore put the cost of this type of translation equal to 80 per cent of that of straight dictation on to the typewriter.

3. *Oral translation*

Dr. Mackay has mentioned what I have termed *oral* translating. It is not my own definition: I have seen it used elsewhere.[1] It is a method which is becoming more widely used. It is, in my opinion, one of the most effective ways of translating and operates as follows:

A user may have seen an abstract somewhere, which does not tell him very much. If he requests a full translation of a rather lengthy paper, say about 20,000 words, this would cost at least £25, taking the very cheapest rate charged by an outside translator for translating from German into English—25*s*., a very low charge. It is, however, very likely that this user does not really want a translation of the full paper but is interested in only a very small portion, and the main task is really to find out which is the short portion really required out of this lengthy paper. To do this, the translator and the user get together and the translator does a very rough running translation of the paper or even only of the headings, captions to the illustrations or diagrams until the real 'meat' of the paper is reached. In my experience this hard core is usually not more than 10 per cent at the most of the total length of the paper and can then be translated in a few hours instead of time being wasted on 20,000 words. Taking into account the time of the user and the translator, there is still a saving of about 50–66 per cent as compared with costs for translating the whole paper. The disadvantage of this system is, of course, summarized in the old proverb 'One man's meat is another man's poison', i.e. the part finally translated out of a lengthy and possibly important paper is of little or no interest to anybody else, while some other user may be interested in a different part of the same paper. Thus if this method is employed consistently, very few papers would be translated in full and the Aslib Commonwealth Index of Scientific Translations would resemble a patch-work quilt.

4. *Sworn translations*

The next group is entitled *Sworn translations* and represents a rather troublesome subject in so far as we are concerned with legal work. Sworn translations are required in many legal proceedings where documents in a foreign language are cited. In view of the popular fiction—which may well be based on fact—that our judges, barristers, scientists, etc., are unable to read anything but the Queen's English, translations have to be provided for their benefit. The only difference between an ordinary translation and a sworn translation lies in that the translator 'does hereby solemnly and sincerely declare (*i*) that he has competent knowledge of the respective languages, and (*ii*) that the translation is a true and correct one'. This solemn Declaration is then made conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declarations Act of 1835.

In terms of economics this means, first of all, that an additional *2s. 6d.* per copy has to be paid for making this said Declaration before a Commissioner for Oaths, but really the costs are much higher, since it must be technically a good translation and furthermore must be presented in a clean manner, as all deletions, additions, corrections, etc., have to be initialled by the Commissioner for Oaths. In short, the additional cost is well of the order of 25–33 per cent over and above that of an ordinary translation.

5. *Mechanical translations*

Mechanical translation has been declared taboo at this conference but I felt that a brief reference should be made to the economic aspects. In a recent talk Dr. A. P. Booth made some guesses about the probable speed of the computer doing the mechanical translations at Birkbeck College. At present the output is 1,000–3,000 words per hour.[2] I have seen the translations which come out and they are quite good, so I will not discuss their quality. But I understand that the output could well be increased to 1,000 words per minute in the not too distant future. The difficulty, I understand, is in the output mechanism, which is purely and simply a mechanical trouble that will soon be overcome. The cost of a commercial computer, as Dr. Booth has stated, which is now being developed is expected to be about £8,000–10,000.[3] Assuming a life of ten years and the services of one electronic engineer for trouble-shooting, programming and servicing the computer and of one language editor to supervise the programming, and so on, the cost per year of such a machine would be approximately £7,000 with a potential output of 400,000 words per day or one hundred million words per year. A team of translators with such an output would charge about £250,000, i.e. thirty-five times the above annual cost of the computer. When this threat to us hard-working translators will really become effective we do not know.

6. *Outside translations*

We often have to send translations out, although we do not always like to do so. It is a question of time and money to a certain extent.

The use of outside translators has quite a few advantages but also several disadvantages. The disadvantages are that usually there is some sort of time-lag —it has been known to be six months—and also the question of reliability of the translation, particularly if an outside translator is used for the first time. I am sure all of us can quote instances where translations commissioned from outside translators had to be edited to a considerable extent or entirely re-written. In short, one has much less control over outside translators than over translations done at one's own premises, except that if we are not satisfied we take care to go somewhere else. The advantages are those of economy, since comparisons with internal translations show an average saving of up to 50 per cent—that is if none of the above-mentioned editing or rewriting has to be done. It also frees one from the actual task of translation so that the time saved may be used for more remunerative tasks, such as dealing with awkward inquiries. If it is a question of urgently required translations, then outside translators can hardly be used.

7. *Co-operative and multiple translations*

This group is meant to embrace both co-operative schemes such as those organized by the Department of Scientific and Industrial Research or the Iron and Steel Institute and also commercial translation services which undertake the translations of complete journals or parts of journals into English as a commercial venture. The co-operative services appear to be very cheap indeed: for instance, a translation under the D.S.I.R. scheme costs at the most 8*s*. per page of the Russian original and may be as cheap as 2*s*. 6*d*. per page; the maximum charge is thus approximately one-third of the standard charge for translations from Russian into English. It is, of course, a hit-and-miss system in that one has to have a certain amount of luck to locate and obtain a translation which one requires, but in spite of this the charges vary—as I have just stated—from 10 to 33, compared with our standard of 100.

The scheme run by the Iron and Steel Institute is of more recent origin and their charges are approximately the same as the maximum charges of the D.S.I.R. scheme. I have been quoted figures of 15*s*. per thousand words of translations from German to English and £1 10*s*. from Russian into English. There is a reduction, I believe, for more copies but it does not affect the actual cost very much.

The translated journals are better represented in the United States than in this country, although Pergamon Press now publish several journals from the Russian, six of which are medical journals and are done under contract for the United States Department of Health. They have also recently commenced the regular publication of the *Journal of Electric Technology, U.S.S.R.*, the English version of *Elektrichestvo*. The general indication given by the subscription rates shows that the average charge per page is of the order of 2*d*.–3*d*., i.e. about 4*d*.–6*d*. per thousand words. Even assuming a rate of usefulness of 40 : 1, i.e. that only one article in forty is of any direct interest to the subscriber, this type of service would rate about 30–33 compared with our standard of 100. Unfortunately this type of translated journal is almost completely confined to Russian originals, although there are one or two other periodicals—such as *Engineer's Digest* and *Machinery Lloyd*—with a wider coverage.

8. *Manuscript*

The only outstanding method of translation not yet treated is *translation by manuscript*. It is quite feasible for internal use to use such translations which take up only one person's time, but the usefulness of such translations is, of course, restricted mainly by the legibility of the handwriting. In any case, many translators are quite capable of typing rather than writing their own translations and this enhances the usefulness of their work. The time taken by the actual writing or self-typing part of the translation is between a quarter and a third of the time taken for translating.

I shall now attempt to compare in tabular form the above methods as applied to a translation of a thousand-word article from Russian into English. The basis of this comparison is roughly this: Assume we pay a technical translator an average rate of about £1,000 a year. (I do say 'average'. There are many people who get much less, and there are quite a number who get much more.) Assume we pay a typist £10 a week. We also allow for the usual commercial overheads of 100 per cent which our accountants have assured us is a reasonably good figure.

Outside translation	(I.L. charge *without* surcharge) £3 17*s*. + 5*s*. for handling invoices, payments and receipts, etc., which our accountants tell us is a reasonable charge.
Internal translation	MANUSCRIPT or self-typing, £2 10*s*.–£2 15*s*.
,, ,,	DICTATION on to typewriter, £3 10*s*.–£3 15*s*.
,, ,,	,, to shorthand typist, £4 10*s*.–£4 15*s*.
,, ,,	,, into dictating machine, £3 10*s*. 6*d*.–£3 15*s*. 6*d*. (6*d*. for dictating machine).
,, ,,	ORAL (or part) translation. 17*s*.–£1 7*s*. 6*d*.
,, ,,	SWORN: costs of any of above methods plus 25–33 per cent, i.e. £3 3*s*.–£6 6*s*.
Mechanical translation	(probable cost), 1*s*. 6*d*.–2*s*.
Co-operative translation	D.S.I.R., 8*s*.–£1 4*s*. + 5*s*. for handling invoices, payment, etc.
	I.S.I., £1 10*s*. + 5*s*. (as above).
	Periodicals, 4*d*.–6*d*.
	,, (with usefulness factor 40), 13*s*. 8*d*.–£1.

This tabulation shows clearly that costs may vary from as little as 4*d*. to £6 6*s*., i.e. the upper limit is 38,000 per cent of the lower limit. You will agree that is a fair range. Another factor affecting cost which is almost impossible to assess is speed, accuracy, the number of copies required (usually, I believe, fixed by the Institute of Linguists at 6*d*. per extra copy per 1,000 words). Secrecy is also very important. Perhaps military secrecy is not quite so important as commercial secrecy! Many people hesitate to farm out translations to agents because they do not particularly want to broadcast what they are interested in.

Yet another factor affecting the cost of translations is the existence of translation pools and indexes which have been mentioned already. The Commonwealth Index of Scientific Translations (run by Aslib in the United Kingdom) and the American Catalogue of Slavic Translations and Abstracts quote a ratio of translations located: translations requested of about 10 per cent. (In the case of the Aslib Index this is higher than shown in the Unesco book on *Scientific and technical translating*. The figure I have given is a more recent one.) Strictly speaking, the above figures should therefore be reduced by 10 per cent.

I should like to stress that the purpose of this tabulation is only to present a general picture of the economics of translation.

If we consider the matter, we find that several hundreds of millions of words are being translated annually all over the world. You may ask how I arrive at this figure, and that question is very difficult to answer. I have found in the Unesco report a figure given by Mr. Light, showing that 200,000 words were translated at the Billingham Division of I.C.I. in 1951.[4] Our own company translated approximately the same number of words last year, as far as I have been able to establish. If we multiply this by roughly a factor of fifty for other large commercial organizations such as I.C.I., we arrive at a figure of 10 million for this country alone. This, you may agree, is a very conservative estimate. So I have reluctantly—shall we say?—used a very low figure and said hundreds of millions of words. The total cost of translating these words runs into millions of pounds. The general trend towards more technical literature means more translation, and unless we can implement some of the ideas we shall discuss this afternoon, it seems we shall go bankrupt in getting this information translated.

REFERENCES

1. F. Crosdale, *Aslib Proceedings*, vol. 9, no. 11, Nov. 1957, p. 344.
2. A. D. Booth, *Aslib Proceedings*, vol. 9, no. 6, June 1957, p. 180.
3. Ibid., p. 181.
4. *Scientific and technical translating.* Unesco, Paris, 1957, p. 81.

CHAIRMAN'S INTRODUCTION

The Chairman, Dr. J. E. Holmstrom, said he felt very honoured to have been asked to take the Chair at this very gratifying meeting of, he thought, over two hundred persons. Before calling on the two speakers, he would like to explain why he had been given this honour.

He had been concerned, in the Department of Natural Sciences of Unesco, in the production of the report entitled *Scientific and technical translating and other aspects of the language problem*, now in its second edition.

This report was written with the collaboration of a great many experts. In some thirty countries over two hundred persons had collaborated in the following way.

First, a draft indicating the kind of report it was intended to produce was circulated. This contained many gaps and a good many purposely provocative statements on which the experts were asked to comment and to supply further information.

In this country the collaboration was very efficiently organized by Aslib. It could truly be said, therefore, that the report was a joint product of Aslib and of Unesco, as well as of the corresponding bodies in other countries.

The report contained a brief discussion of the various problems arising from the fact that about half of the world's scientific literature—and here the word 'scientific' included, of course, applied science, engineering, industrial science, and so on—was printed in languages which half the world's scientists and technologists could not read.

The loss of international understanding needed no emphasis and the first of the seven chapters of the report gave a rough estimate of the proportions in which the main languages of the world were used for scientific purposes. Then came a chapter on the art of scientific and technical translating, followed by a chapter on methods and organizations for translating. The next chapter dealt with a subject in which Aslib had a great part to play—the making available of translations in order to spread the cost or pool the cost of making translations. He was referring here to such organizations as the Commonwealth Index of Scientific Translations and similar agencies in some other countries. The alternatives to having all this foreign literature translated were discussed. These alternatives included improving the ability of scientists and technologists to read about their own subjects in the original languages; and a bibliography of books designed to improve their reading knowledge of foreign languages was appended. Another possibility discussed in the report was that of seeking to reduce the number of languages used as vehicles for scientific publication.

Finally, there was a chapter on the all-important matter of terminology and lexicography. Unesco had done a good deal of work in trying to bring about the production by the appropriate specialized bodies of more and better specialist dictionaries in the field of science and technology.

He would say no more about the report than that at the end there was a recapitulation of proposals discussed in it, regarding which further expressions of opinion were invited. There were ten or a dozen of these proposals, and they had been reproduced, with very short notes, in a document that was in the hands of members of the conference.

He hoped that out of the conference might emerge resolutions advocating practical steps to improve matters. There had been a great deal of talk round and round the various problems, and the next step was to do something about them. They might refer to action which could be started in the United Kingdom by Aslib or action on the international plane which would be proper for Unesco to initiate, provided, of course, that they had the money. Definite expressions of opinion from the conference would considerably strengthen their hands in Unesco.

DISCUSSION

The CHAIRMAN said that both Dr. Mackay and Mr. Liebesny had raised many interesting points. He had been particularly interested in Dr. Mackay's concept of a scientific paper, and its translation, having a 'half-life' like a radioactive element. This was a very neat and useful idea.

One point was in a sense common to both papers—that full translations of complete papers might not in all cases be an economic way of tackling the problem. Dr. Mackay had pleaded for a greater use of periodical subject reviews on progress or development, these being translated instead of individual papers. This had a lot to be said for it.

Perhaps abstracts as they were now known had reached their heyday a generation ago. It might well be that they would be replaced by indexes or punched cards or electronic machines and so on, from which references to a given topic could be retrieved on demand. Complementary to that would be annual subject reviews on progress in particular fields, like those now existing for physics and chemistry and so on, such reviews serving as frameworks on which to hang bibliographical references. Such handbooks containing a review by an expert on what had happened during the past year in general were very valuable, but they could also be dangerous. The writer of such a review had to take the responsibility of saying in effect to the reader, 'Of course, a great deal more has been published than I have mentioned here, but in so far as you are willing to accept my judgment the papers which I have cited in footnotes are probably the most significant'. Unless he was a real expert of world-wide reading and balanced judgment that could be very dangerous.

Mr. Liebesny had spoken in great detail and had given considerably more data than were included in the report on the cost of translating, which was very valuable. He himself had found during the preparation of the Unesco report that there was great variation from country to country in the manner of charging for scientific and technical translations. In some cases it was customary to charge so much per thousand words; in others, for reasons he had never understood, for a folio of seventy-two words or a line of ten words or an individual word.

Therefore, for the sake of comparability, rates of payment had been converted to United States cents per individual word.

An attempt had also been made, in view of the general and perfectly justified feeling that translators were underpaid and did not earn as much as persons of equivalent combinations of qualifications could earn in other ways, to work out in round figures how many thousand words a year a translator would have to translate in the year in order to make the same income as a Government meteorologist in different countries. A meteorologist had been chosen because the International Labour Office had published a report comparing the payment received by meteorologists, as typical of scientific workers, in different countries.

The Chairman, briefly summarizing the discussion, said that MR. R. J. MOSELEY (Research Association of British Rubber Manufacturers) had spoken of the trend away from translating full articles and thought the great advantage in having translations made on the spot rather than outside was that it enabled the translator to tell the user beforehand what the article was generally about. The translator could then take instructions as to the parts which needed translating and could consult with research workers as to new terminology which had not yet found its way into dictionaries.

MRS. E. HERBORN (Bristol) had emphasized that dictionaries were dangerous. (So they were, but they were also necessary, because it was a counsel of perfection to insist always on finding a specialist when dealing with highly specialized subjects, especially in out-of-the-way languages.) Mrs. Herborn was of the opinion that German and Russian ought to be taught in schools rather than Spanish.

MR. A. H. HOLLOWAY (Ministry of Supply) had pointed out that reviewers were not necessarily interested in the aspects of the subject required by the user. On these grounds there was, he thought, a strong case for cover-to-cover translations which might be more economic in the long run, provided they could be marketed on a scale big enough to cover the overhead cost.

DR. J. THORNE (Dept. of German, University of Birmingham), who made some useful points, thought the most economic method in translating time was for the translator to be in close consultation with the subject expert. He also made the point that soaking oneself in the literature was a better way of acquiring terminology than the use of dictionaries.

DR. D. J. URQUHART (D.S.I.R. Lending Library Unit) thought that cover-to-cover translations might be the only answer, because they did away with the difficulty of selection. Also it was easier and more straightforward to market cover-to-cover translations than individual translations kept in a pool or arrived at by means of an index. Dr. Urquhart referred to the possibility, mentioned by Dr. Mackay, of eliminating the necessity for translation by the international adoption of a single language for scientific communication. At the moment this would have to be English but in the future it might well be Chinese.

MR. P. F. COLE (The British Petroleum Co. Ltd.), like some other speakers, had questioned the half-life concept. He thought subject summaries might be dangerous. The idea of a combined translator and information officer ranging over a lot of literature and selecting matter for translation would not appeal to every scientist. Mr. Cole also thought that translations tended to be too long, especially if the translator was paid so much a word of English. Here he was, perhaps, a little hard on the translator. What was the wretched man to do if people would not tell him beforehand whether they wanted a full translation or an abbreviation?

DR. A. E. STUBBS (Consultants Bureau Inc., New York) said that in organic chemistry many articles had had to wait for interest in them to mature. On this ground he too challenged the half-life concept put forward by Dr. Mackay. Nevertheless that might be a good generalization, though obviously very difficult to work out. Some evidence on the varying length of time for which subjects remained of interest was presented at the Scientific Information Conference at the Royal Society in 1948.

MR. H. BRUCK (Olympia Translation Service) had drawn attention to the importance of translations of articles for publication in the technical Press. These might be read many months or years after publication. He had evidence that this was so. He had pointed out that the methods of payment for translations were, in general, unrealistic.

MR. M. J. KERR (Standard Telephones and Cables Ltd.) had urged Unesco to publish lists of important periodicals in all fields, especially scientific periodicals all over the world. He could rest assured that this could not be done in two days, as he had suggested. The Chairman had been doing it now for eight years and he had not finished the job. Unesco was also trying to encourage the practice of printing an author's synopsis with every article. This had many advantages. A leaflet entitled *Guide for the preparation and publication of synoposes* was available for precisely that purpose and it had already had a useful effect. Mr. Kerr had suggested that the inconsistencies and irrationalities of English spelling hampered the learning of Russian and that Aslib should support spelling reform. He had further suggested that the best way to encourage the learning of Russian or other languages by scientists would be to offer an increase in salary for each language.

Mr. A. G. Readett (National Coal Board) thought the half-life an overgeneralization. It certainly would not be true for literature in the mining field. Again, Dr. Urquhart's comment that Russian was the most important language was not true of the coal industry. Clearly the dominant language varied with the subject.

Mr. A. T. Pilley (The Linguists' Club) had referred to the Translators' Guild which was the United Kingdom member of the Fédération Internationale des Traducteurs (F.I.T.). The Guild was in process of drawing up two lists of translators, one a specialized list on the lines of the Aslib list, to be kept at the headquarters of the Institute of Linguists, the other intended for publication, showing languages and covering a few general headings. He had also pointed out that in applying the standard rate of payment recommended by the Institute of Linguists the word-count should be based on the original, not the translated text.

Dr. Holmstrom expressed the hope that his summary would be helpful and that a further useful discussion would take place at the afternoon session. It was his hope that the discussion would result in definite resolutions adopted by the conference which would strengthen Aslib on the one hand and Unesco on the other and enable them to secure definite practical steps forward to overcome some of the difficulties and problems that had been referred to.

SELECTIONS FROM THE RECENT LITERATURE

Books and Pamphlets

American Geological Institute
Glossary of geology and related sciences: a cooperative project; coordinating chairman J. V. Howell. Washington, the Institute, 1957. x, 325 pp. (National Academy of Sciences—National Research Council publication 501.) $6.

Ausschuss für Wirtschaftliche Verwaltung
Zeichnungsarchivierung auf Mikrofilm: technische Richtlinien. Stuttgart, Dorotheen Verlag, 1958. 24 pp. table. diagr. (AWV-Schriftenreihe Nr. 147.) DM2.80.

Booth, Andrew D., *and others*
Mechanical resolution of linguistic problems, [by] Andrew D. Booth, L. Brandwood [and] J. P. Cleave. London, Butterworths; [New York, Academic Press], 1958. vii, 306 pp. plates. tables. diagrs. 50*s*.; $9.80.

Booth, Kathleen H. V.
Programming for an automatic digital calculator. London, Butterworths; [New York, Academic Press], 1958. vii, 238 pp. tables. diagrs. 42*s*.; $7.50.

British Productivity Council. North London Productivity Committee
O & M—productivity in the office (conference proceedings) 20th November, 1957. Enfield, the Committee, [1958]. 54 pp. mimeographed.

British Transport Commission. British Railways. *London Midland Region*
Instructions for the preservation or destruction of records and correspondence. London, British Railways, 1957. 55 pp.

Brummel, L.
Miscellanea libraria: opstellen over boek- en bibliotheekwezen ter gelegenheid van zijn 60e verjaardag aan de schrijver aangeboden door vakgenoten en vrienden. 's-Gravenhage, Nijhoff; [London, Batsford], 1957. ix, 233 pp. front. plates. facsim. 32*s*.

Canadian Library Association
Canadian library directory, 1958. Ottawa, the Association, 1958. 62 pp.
[Issued in *Canadian Library Association Bulletin*, vol. 14, no. 4, February, 1958.]

Chapin, Ned
An introduction to automatic computers. Princeton, N.J., London, Van Nostrand, 1957. viii, 525 pp. front. illus. tables. diagrs. 51*s*.

Daniels, Lorna M., *comp.*
Studies in enterprise: a selected bibliography of American and Canadian company histories and biographies of businessmen. Boston, Baker Library, Harvard University Graduate School of Business Administration, 1957. xiv, 169 pp. $4.50.

Deutsche Forschungsgemeinschaft
Verzeichnis der deustchen wissenschaftlichen Zeitschriften, 1957; hrsg. von Bernhard Sticker. 4, neubearbeitete Aufl. Wiesbaden, Steiner, 1957. 63 pp. [5*s*. 6*d*.]

Frank, Otto
Grundlagen der Ordnungstechnik. 2 ergänzte Aufl. Stuttgart, Dorotheen-Verlag, 1957. 116 pp. illus. tables. diagrs. (Handbuch der Klassifikation, Heft 3.) DM6.50.

Fromaigeat, E.
Die Technik der praktischen Übersetzung: deutsch-französisch. Zürich, Verlag des Schweizerischen Kaufmännischen Vereins, 1955. 118 pp. Sw. Fr. 12.

Henderson, G. P., *comp.*
Current British directories: a comprehensive guide to the local, trade and professional directories of the British Isles. 3rd ed. London, Jones & Evans' Bookshop, 1958. xiv, 273 pp. mimeographed. 30*s*.

Hepworth, Philip
Archives and manuscripts in libraries. London, Library Association, 1958. 30 pp. front. (Library Association pamphlet no. 18.) 5*s*. (3*s*. 6*d*. to members.)

Hirst, John
First steps in reference work: a handbook for students. Sydney, the author, 1957. iv, 39 pp.
[Obtainable from the author at 44 Landers Road, Lane Cove, Sydney, N.S.W.]

John Cotton Dana: the centennial convocation; addresses by Arthur T. Vanderbilt and L. Quincy Mumford, with a prefatory note by James E. Bryan. New Brunswick, N.J., Rutgers University Press, 1957. 63 pp. $2.75.

Lauche, Rudolf
Internationales Handbuch der Bibliographien des Landbaues—World bibliography of agricultural bibliographies; hrsg. im Auftrag des Land- und Forstwirtschaftlichen Forschungsrates, mit Unterstützung der deutschen Forschungsgemeinschaft. München, Bayerischer Landwirtschaftsverlag, 1957. v, 411 pp. DM49.

Laves, Walter H. C., *and* Thomson, Charles A.
Unesco: purpose, progress, prospects. Bloomington, Indiana University Press, 1957. xxvi, 469 pp. $7.50.

Library Association
Five years' work in librarianship, 1951–1955; ed. by P. H. Sewell. London, Library Association, 1958. viii, 418 pp. 60*s*. (45*s*. to members.)

Library Association. Reference and Special Libraries Section
Reference and special libraries: technical problems—1957; proceedings of the annual conference, Harrogate, April, 1957; ed. by Harold Smith and H. German. London, the Section, 1957. 48 pp. 3*s*. (2*s*. 6*d*. to members.)

London. University. *Institute of Advanced Legal Studies, and* Society of Public Teachers of Law
Legal research topics for higher degrees in British universities understood to be current. London, the Institute, 1957. 14 pp. mimeographed.

Mills, Geoffrey, *and* Standingford, Oliver
Office organization and method. 2nd ed. London, Pitman, 1958. viii, 360 pp. illus. diagrs. 22*s*. 6*d*.

Milan. Biblioteca Comunale. *Sezione Catalogo Centrale*
Catalogo dei periodici esistenti nelle biblioteche milanesi associate al Catalogo Centrale. Milano, Comune, 1957. viii, 483 pp.

Mühlpfordt, Günter
Transkriptionsprobleme: die korrekte Wiedergabe russischer Namen im Deutschen; mit Beiträgen zur Retranskription von Kurt Diesing. Berlin, Rütten & Loening, 1957. 176 pp. tables. [14*s*. 10*d*.]

Music Library Association *and* American Library Association. Division of Cataloging and Classification
Code for cataloging music and phonorecords. Chicago, American Library Association, 1958. 88 pp. $2.25.

National Book League
Science for all: an annotated reading list for the non-specialist; prepared in consultation with the British Association for the Advancement of Science. Cambridge, University Press for the League, 1958. viii, 177 pp. 9*s*. 6*d*.

Penalosa, Fernando
The Mexican book industry. New York, Scarecrow Press; [London, Bailey Bros.], 1957. 312 pp. $6; 54*s*.

Sauter, Hermann
Aufgaben und Bedeutung der wissenschaftlichen Bibliotheken. Speyer, Pfälzische Landesbibliothek, 1956. 23 pp. (Pfälzische Arbeiten zum Buch- und Bibliothekswesen und zur Bibliographie, Heft 1.)

Schutze, Gertrude, *comp.*
Bibliography of guides to the S-T-M literature scientific — technical — medical. New York, the compiler, 1958. 64 pp. mimeographed. (Contributions to S-T-M library literature, no. 1.)
[Available from Gertrude Schutze, 801 Ortona Park North, New York 60, N.Y.]

Scottish Council (Development and Industry)
Report on a survey of small and medium engineering firms in Scotland with special reference to their needs for information and the flow of information. [Edinburgh,

the Council, 1957]. iii, 174 pp. tables. mimeographed. 20*s.*

SPICERS, Ltd.
The pen and the rose. London, Spicers, 1957. 28 pp. illus. facsims. gr.
["Offered to the discriminating user of paper, type and illustration as a specimen of Penrose text (paper)".]

UNITED STATES. National Science Foundation. *Office of Scientific Information*
Non-conventional technical information systems in current use. Washington, the Foundation, 1958. v, 43 pp. gr.

WAGNER, Frank S., *comp.*
A dictionary of documentation terms. Clarkwood, Texas, Celanese Corporation of America, 1957. 16 pp.

WALDO, Willis H.
Better report writing. New York, Reinhold; London, Chapman & Hall, 1957. vii, 231 pp. $4.75; 38*s.*

Articles and Papers

BERNIER, Charles L.
Correlative indexes, V: The blank sort. *American Documentation,* vol. 9, no. 1, January, 1958, pp. 32–41.

DREWS, Erich
Zur Entwicklung der nationalen deutschen Bibliographien seit 1945. CAR-ZEISS-STIFTUNG, *Jena. Buch und Volk*: 60 *Jahre Ernst-Abbe-Bucherei,* 1956, pp. 110–7.

FOSTER, Laurence S.
Revision of the ASM–SLA Metallurgical Literature Classification. *American Documentation,* vol. 9, no. 1, January, 1958, pp. 13–19.

FUSSLER, Herman
The research library in transition. *University of Tennessee Library Lectures,* no. 8, 1956, pp. 13–40.

HILL, George
The use of *BNB* catalogue cards at Manchester College of Science and Technology Library. *Librarian and Book World,* vol. 16, no. 10, October, 1957, pp. 192–5.

JENSSEN, Hans
Periodicals routing with diazo at the FAO Library. *Unesco Bulletin for Libraries,* vol. 12, no. 4, April, 1958, pp. 82–84.

KENT, Allen
The dollars-and-cents value of company libraries. CHICAGO. University. *University College. Proceedings, Executive Conference on Organizing and Managing Information,* 1957, pp. 20–27.

MERRYMAN, John Henry
Tactics and terminology in information retrieval: a summary of recent work. *College and Research Libraries,* vol. 19, no. 1, January, 1958, pp. 33–37.

STILES, H. Edmund
Identification of the conditions or valid application of machines to bibliographic control. *American Documentation,* vol. 9, no. 1, January, 1958, pp. 42–49.

UNITED STATES. Patent Office
Recent advances in patent office searching: steroid compounds and ILAS. Washington, the Office, 1957. 15 pp. tables. diagrs. (Patent Office research and development reports, no. 8.)
[Prepared by Julius Frome, H. R. Koller, Jacob Leibowitz, H. Pfeffer and Don D. Andrews.]

VICKERY, B. C.
Research in documentation. *Library Association Record,* vol. 60, no. 2, February, 1958, pp. 41–45.

All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

NEW MEMBERS

Corporate

Allen-Bradley Technical Library	Miss G. H. Martin
Australia. Commonwealth Department of Social Services	Miss L. A. Cheesman
Baghdad Pact Nuclear Centre	The Director
Blackwood Hodge, John, & Co. Ltd.	A. A. Holmes
Bradford Institute of Technology	Dr. E. G. Edwards
British Schering Limited	Dr. R. A. Miley
Carter & Co. Ltd.	W. D. Cash-Reed
Chemicals & Feeds Ltd.	J. R. Giles

Chemstrand Limited	C. Downing
Companhia Uniao Fabril	
Dadd, Geoffrey, Ltd.	S. W. Cox
Dussek Bros. & Co. Ltd.	A. W. Thompson
Hyderabad. Regional Research Laboratory	Dr. S. Husain Zaheer
Kiel. Bibliothek des Instituts fur Weltwirtschaft an der Universitat Kiel	Professor W. Gulich
Leeds College of Art	Miss M. L. Seaman
Leek Chemicals Ltd.	F. N. Morris
Loewy Engineering Co. Ltd.	F. J. Hackett
MacDonald, Sir Murdoch, & Partners	A. A. Middleton
Michelin Tyre Co. Ltd.	D. C. Jeffrey
Pig Industry Development Authority	Miss A. Thirkell Smith
Polak and Schwarz (England) Ltd.	J. Pickthall
Pontypridd Public Library	R. W. Davies
Raleigh Industries Limited	W. Brown
Rathbone Books	J. Fisher
Reads Ltd.	J. B. Hilditch
Reed, Albert E., & Co. Ltd.	D. Ball
Singapore Polytechnic Library	The Librarian
Spain. Consejo Superior de Investigaciones Cientificas	A. Tortajada
Squibb Institute for Medical Research	Miss W. Sewell
Taiwan Trade Information Bureau	Y. S. Chen
Tentest Fibre Board Co. Ltd.	A. Friend
Texas Company	L. C. Stork
Texas Woman's University	I. L. Schulze
Ustav pro Technicke a Ekonomicke Informace	K. Havlicek
Verein Deutscher Maschinenbau-Anstalten e.V.	F. D. Schmitz
Welsh College of Advanced Technology	
Wengers Ltd.	J. A. L. Wenger
Westinghouse Brake and Signal Co. Ltd.	J. R. Laidlaw
Wilmot Breeden Ltd.	U. F. Marx
Wissenschaftliche Gesellschaft für Luftfahrt e.V.	Dr. H.-J. Rautenberg
World Federation of Scientific Workers	Professor C. F. Powell

Individuals

Buckley, L. G.
Davinson, D. E.
Dorrell, Mrs. J. G. W.
Drozda, R.
Eason, E. H.
Hatton, R. H.
Herriott, Mrs. C.
Lewkowitsch, Dr. E.
Poole, J. S.
Sherwani, A. K.
Smith, E. P.

ASLIB CALENDAR

MAY

FRIDAY 30th. Scottish Branch meeting. See paragraph below.

JUNE

TUESDAY 3rd. Annual General Meeting. See paragraph below.

TUESDAY 10th. Second Conference on Business Records. See paragraph below.

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference at Nottingham University.

OCTOBER

WEDNESDAY 8th. Scottish Branch visit. See paragraph below.

NOVEMBER

THURSDAY 27th–FRIDAY 28th. Northern Branch Conference at Sheffield.

New Address

On and after Monday 18th May Aslib's address will be 3 Belgrave Square, London, S.W.1. Telephone: Belgravia 5050.

Second Conference on Business Records

It has been found necessary to alter the planned date of this conference. It will now be held on Tuesday 10th June, instead of 20th May as announced in the March and April issues. A notice was sent out last month bearing the corrected date. The conference will be held at the Connaught Rooms, Great Queen Street, London, W.C.2, and will start at 10 a.m. It will be remembered that, in March last year, Aslib organized a conference intended to draw the attention of the industrial and commercial world to the potential value of many of their records to the community. This second conference is envisaged as a step towards the solution to some of the problems raised in the earlier discussions.

Annual General Meeting

The Annual General Meeting will be held at 3 p.m. on Tuesday 3rd June at the Connaught Rooms, Great Queen Street, London, W.C.2. It will be preceded by a members' luncheon at 12.30 for 1 p.m., the charge being 17*s.* 6*d.* a head. A separate notice has already been circulated.

Members will be pleased to know that Mr. F. C. Francis has consented to continue as President of Aslib for the coming year and that the Earl of Verulam has agreed to serve as Vice-President in the vacancy caused by the retirement of Sir Andrew McCance.

Scottish Branch

At a committee meeting on 18th March Mr. C. G. Wood, Librarian, the Royal College of Science and Technology, Glasgow, was elected Chairman in place of Dr. W. M. Cumming, retired. Mr. A. Liddle, Librarian, Messrs. Babcock & Wilcox, Renfrew, was elected Vice-Chairman. A tentative programme for the year was drawn up.

On Friday 30th May the Branch will hold an afternoon meeting at the Royal College of Science and Technology, Glasgow. The subject will be methods of micro-recording, and it is hoped to include a display of library equipment. On Wednesday 8th October a visit is planned to Messrs. Dunn & Wilson, library bookbinders of Falkirk.

Translations Index

Those members who do not automatically report their translations to Aslib are earnestly invited to do so. The Translations Index now contains some 30,000 references, nearly all of translations of journal articles. It covers all scientific subjects and all foreign languages. The cards are arranged under the title of the journal or other reference. Persons contemplating making a translation can check to see whether an English version has already been reported and is available.

The Index is the British copy of the *Commonwealth Index of Unpublished Scientific and Technical Translations* which is compiled co-operatively with Canada, India, South Africa, Australia, and New Zealand, under the co-ordination of the British Commonwealth Scientific Office in London. In each country a centre collects details of the translations prepared and of their availability, i.e. whether on loan or for sale. In the United Kingdom Aslib performs this service and receives about 4,500 entries a year.

It would be much appreciated if members and others who are not already reporting to the Index would do so, thus helping to make it a more effective instrument for the avoidance of duplication of translating and for the reduction of members' own expenditure on this costly service.

Aslib Membership List

In order to ensure that entries in the Aslib membership list are accurate, special forms were sent to all members during March and April. Those whose names appeared in the list contained in the last *Aslib Year Book* received a mounted cutting of their previous entry. Many of the forms have already been returned, but members who have not already returned their forms are asked to send them immediately to Aslib, 3 Belgrave Square, London, S.W.1.

Miss Barbara Kyle

The National Book League has announced the appointment of Miss Barbara Kyle as Assistant Director of the League. Miss Kyle was elected a member of Aslib Council in 1949 and has since given her services as Honorary Secretary (1951–55), Chairman of Council (1955–57) and, since 1957, as Chairman of the International Relations Committee. The Conferences and Meetings, Education and Executive, and Finance Committees have also benefited in recent years from her services. Members will wish to congratulate Miss Kyle on her new appointment.

The Indexer

Aslib has received the first issue of the new journal *The Indexer* which is issued by the Society of Indexers. It contains articles on indexing documents as well as information about the Society itself. It is issued free of charge to all members of the Society and to non-members for a subscription of 10*s.* 6*d.* or $1.50 per annum. Inquiries should be addressed to G. Norman Knight, M.A., Hon. Secretary Society of Indexers, 3 Western Parade, Barnet, Herts.

National Central Library

The Trustees of the National Central Library have appointed Mr. S. P. L. Filon, B.SC., F.L.A., as Librarian and Secretary to the Trustees in succession to Mr. R. H. Hill, M.A., F.L.A., retired. Mr. Filon took up his new appointment on 1st April. Aslib members will wish to extend to Mr. Hill, for many years a member of the Council of Aslib, their best wishes for health and happiness in his retirement. They will also wish to congratulate Mr. Filon on his new appointment.

British National Book Centre

As a result of increased costs since existing rates were fixed in 1954, and at the suggestion of H.M. Treasury, the Executive Committee of the National Central Library have decided to raise the annual subscriptions for Book Centre lists. The new subscriptions are: Book lists £3 10*s.*, air mail £5 10*s.*; Periodical lists £2 10*s.*, air mail £3. These rates apply to new subscriptions and to renewals of subscriptions falling due on or after 1st March 1958.

International Paper Sizes

The British Standards Institution has initiated a progressive changeover in the sizes of paper used for correspondence, duplicating, and printing. The new sizes are taken from the international 'A Series'. They are already in use in twenty-six foreign countries and are likely to be formally adopted as a world standard by the International Organization for Standardization (ISO). Every size in the series is of the same proportions ranging from 26 × 37 mm. to 1682 × 2378 mm.

Commonwealth Research Librarianship

The Commonwealth Research Librarianship at Lehigh University for the academic year 1958–59 has been awarded to Miss Margaret Evans, B.A., A.L.A., Assistant Librarian at University College Cardiff. Applications for this award are considered jointly by Aslib and the Library Association, and it is gratifying that, for the second time in three years, a candidate from the U.K. has been selected.

Henry E. Huntington Library and Art Gallery

Mr. Robert O. Dougan has been appointed Librarian of the Henry E. Huntington Library and Art Gallery, San Marino, California, as from 1st June 1958. He succeeds Mr. Leslie E. Bliss who retires after forty-three years' service.

MEMBERS' ADVERTISEMENTS

MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared. American and English only. Work called for and delivered within reasonable distance. B. M. Collins, 77 Walm Lane, Willesden Green, London, N.W.2.

TRANSLATIONS, Technical and Commercial, from German and French, promptly executed by experienced man (on Aslib register of specialist translators). H. B. Andrews, F.R.S.A., F.I.L., 43 Wansunt Road, Bexley, Kent. Bexleyheath 3071.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

ASSISTANT LIBRARIAN (female) required for abstracting. Applicants must have a degree in chemistry; good reading knowledge of French and German required; experience in library work or abstracting would be desirable, but not essential. Permanent post, hours 9 a.m. to 5.30 p.m., Monday to Friday. Apply initially in writing, quoting reference No. 30, to the Personnel Officer, May & Baker Ltd., Dagenham, Essex.

ATOMIC POWER CONSTRUCTIONS LIMITED require an INFORMATION OFFICER. Applicants should preferably be graduates in some branch of science or technology and have had some experience of information services. Included among the duties of the Information Officer will be the supervision of an expanding technical library. Please apply to: The Secretary (Ref. 10/AP), Atomic Power Constructions Ltd., 28 Theobalds Road, London, W.C.1.

JOHN INNES HORTICULTURAL INSTITUTION require a Librarian for a small but specialized library. Applicants should have a scientific background, preferably with a pass degree or equivalent, and should be proficient in German. Salary in the scale £370–£990 according to age and qualifications. Superannuation. Applications, with the names of two referees, should be sent to the Secretary, Bayfordbury, Hertford, Herts, not later than three weeks after the appearance of this announcement.

PHYSICIST with good knowledge modern physics and interest in its literature required as EDITOR for Section A (Physics) of monthly publication *Science Abstracts*. Age about 30 or over. Starting salary up to £1,450 according age, qualifications and experience. Pension scheme. Apply Secretary, The Institution of Electrical Engineers, Savoy Place, W.C.2.

TECHNICAL LIBRARIAN. Lady, preferably over 25, for large electronic engineering firm, half-hour Holborn station. Duties: U.D.C. classification, inter-library loans, information work. Pleasant sunny room. Five-day week. Desirable qualifications: B.SC. or knowledge of electronics; A.L.A. standard in classification and cataloguing; typing. Good pay, according to qualifications. Please send details to Box no. 2, Aslib, 3 Belgrave Square, London, S.W.1.

UNIVERSITY COLLEGE OF RHODESIA AND NYASALAND. Applications are invited for an Assistant Librarianship. Candidates are expected to possess a degree. Library qualifications and experience an additional recommendation. The provisional salary scale is £940 × 50–£1,340 p.a., entry point determined by qualifications and experience. Superannuation Scheme. Passages to Salisbury for appointee, wife, and dependent children on appointment with allowance for transport of effects. Unfurnished accommodation at rent of 15 per cent of salary. Detailed applications (six copies) naming three referees by 10th June 1958 to Secretary, Inter-University Council for Higher Education Overseas, 29 Woburn Square, London, W.C.1, from whom further particulars may be obtained.

Wanted

A copy of Chadwick, *Studies in early British history*, C.U.P. 1954. Offers to Miss E. Ditmas, Beechwood, Aspley Guise, Bletchley, Bucks.

CALCUTTA UNI CENTRAL LIBRARY

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 10 **June 1958** **Number 6**

THE TRAINING OF TRANSLATORS

BY A. G. READETT

Translation Section, National Coal Board

Scientific and Technical Translation Conference, London, 5th March 1958

INTRODUCTION

THE subject on which I have been asked to speak is 'The training of translators". This is not an easy matter, particularly as there can, in the nature of things, be no golden rule for training for a task so complex and varied as that of the translator, especially in technical or scientific matters. I shall make no apology for approaching this subject from a very practical point of view.

So far as I am aware, there is in this country no training, in the strict academic sense, for translation work; neither are there specialist schools for translators such as exist on the Continent. For this reason, I propose to discuss the subject by means of a particular example drawn from actual practice, namely, the training and help provided for translators working in the office of the National Coal Board in London.

Having said this much by way of introduction, I propose to divide my paper into three parts; firstly, I shall indicate the measures adopted to fit translators for the highly specialized work involved, and the various means which have been employed to assist them to the full in the execution of their work. In the second part of the paper, I shall draw attention to some of the practical problems which have been encountered over a period of almost seven years, and seek to discuss these in detail; it is especially these difficulties—or those of a similar kind—which the training given must seek to meet. We must clear these away before we can progress very much further with the problems we have to face. Finally, I shall indicate—in the light of our experience in our own particular field—what we regard as the most urgent measures needed to deal with the major problems outstanding today.

The National Coal Board's Translation Section provides a full linguistic service for the entire organization—at Headquarters and throughout the country—and its work may be classified under three principal heads:

1. The preparation of abstracts from selected articles in the foreign technical press dealing with the various special fields in the Coal Industry.
2. The preparation of full-length translations of such articles. This is by far the largest part of the Section's task.

3. The provision of a variety of services dealing with linguistic problems, e.g.: interpreters for discussions with visiting engineers or scientists, the translation of legends to workshop drawings and the like, preparation of glossaries or standard terminologies and so on.

1. MEASURES ADOPTED TO TRAIN AND ASSIST TRANSLATORS

From the very beginning, it was realized that the work of a translator in the Translation Section of the National Coal Board would be extremely difficult, by reason of the very wide range of scientific and technical subjects to be dealt with. In the first place, the office was to be staffed exclusively with professional linguists, who had no previous knowledge of mining whatsoever and only rarely any specialist knowledge of technical or scientific subjects in general. The choice was deliberate, and the reasons are discussed in Part 2.

In the early stages of organization of the Section, it was observed that the great majority of papers to be translated were in German. The other languages handled, ranged in order of importance at that time—seven or eight years ago—were French, Russian and Dutch, with occasional papers in the Scandinavian languages, Polish and Czech. Consequently, whenever translators were recruited, it was decided that they must always have German, with at least one other language, to Honours degree standard. This has ensured a certain degree of flexibility in working and has proved very sound, since German is still the principal language handled, although the relative proportions have changed considerably since then. Russian and French roughly tie for second place, in our work at any rate.

The first thing to be done was to gain the confidence and co-operation of the Board's specialist staff. At headquarters we have a large staff of specialists and scientists responsible for various branches of work and most of them had very little idea of what a translation service could do. As an initial step, the specialists were asked to read through translations in the draft state and to comment on the accuracy and clarity of the English version put before them; they were not, be it noted, asked to rewrite the text presented to them. This proved to be a relatively easy matter, a very large proportion of translation requests being initiated by Headquarters engineers or scientists; their request included an indication of the number of copies they wished to distribute to their specialist staff throughout the country. Since they were to bear the responsibility for ordering the distribution of such a translation, perhaps 100–250 copies, it was very much in their interest to ensure that the translation should be unexceptionable before it was distributed.

This collaboration was very readily forthcoming and proved most fruitful; manuscript corrections in the draft translation were used to mark doubtful translations or ambiguous passages, and to draw the attention of the translator to wrongly translated words or phrases, or to the correct technical expression or 'jargon' to use. Bear in mind that this was at the beginning, when we had to learn. There was, I repeat, no question of complete rewriting by the expert. A careful study of such an annotated draft can be highly instructive to a translator; it is most desirable that he should not make the same mistake twice, and that he should note for future reference any suggestions or new expressions which have been proposed to him. Furthermore, the various queries indicated by the specialist in the draft translation gave the opportunity for discussion of doubtful or ambiguous passages between the translator and the subject expert, again much to the benefit of the translator. This has led over the years, moreover, to a smooth and understanding collaboration between the translators and the Board's specialist staffs.

After some time, it was felt that this procedure was not systematic enough. Although it dealt efficiently with the specific problems in a given paper it did not deal with the fundamentals of the job. The fact that most of the translators then in the Section had come to the Board at roughly the same time—within, say, a year—and, in addition, could be said to be equally uninformed in the various highly specialized fields of research and development with which they were called on to deal, led to the decision to institute a series of lectures.

Various subject specialists were invited to give an informal talk on the technicalities of their particular field; they were particularly asked to bear in mind that they were addressing laymen who would be called upon to deal, at great length and in considerable detail, with technical discussions and arguments of an advanced kind. For this reason they were encouraged to speak on the first principles of their subject, but also to draw attention to theories or difficult points likely to be met with and requiring special care.

Among the lectures given in this early series—and I quote them simply as examples—were those by the Board's geologist, ventilation engineer, coal preparation engineer and so on. Full use was made of lantern slides, diagrams, models and specimens, as the lecturers chose, and translators were unanimous in recording the gain in understanding of the subject which resulted from such talks. It is an interesting fact that, in addition, the subject specialists were most impressed by the desire of the translators to be instructed, and this contributed largely to gaining their confidence. I shall refer again to this important point later.

Perhaps the most convincing proof of the value of these talks—which, naturally enough, took up a good deal of the specialists' time—is that the number of corrections or queries on an annotated draft was found to be consistently lower after a talk on the subject in question.

In addition, we made use of existing services. The National Coal Board has, for a long time, had a section responsible for preparing films on special subjects. Some of these films are intended to be used in training engineers and technicians in the use and servicing of new machines, perhaps manufactured in this country or abroad, while others provide a survey of various methods of performing a particular task or operation. Showings of such films have been arranged at frequent intervals, so that translators can become fully familar with the latest methods and equipment available; this is especially valuable if a device or a method is introduced from abroad, as the translator is then able to see the actual unit in operation, sometimes during the period when he is actually working on a detailed description in a journal. The fact that these films are prepared for instructional purposes means that frequently the shots are chosen to emphasize some particular detail of construction or operation, often together with animated diagrams or model shots. Consequently, it is often the case that certain details will be made clearer by a good film of this kind than would be possible in a visit to such an installation underground.

Special visits have been arranged, from time to time, to convenient collieries—usually for three or four translators at a time—so that they may gain a clear idea of the general atmosphere and layout of a mine, as well as of the various operations which take place in a face or roadway, and the manner in which the equipment is installed and used. A single visit of this kind gives a far better impression of the 'feel' of a mine than any description could do. Frequently, in the middle of a paper, a half-remembered detail from such an underground trip comes to mind and makes matters much clearer. This kind of first-hand experience has been found invaluable, although its utility has sometimes been questioned. Translators are sometimes called upon to accompany parties of foreign visitors to Coal Board installations in various parts of the country, or to go with Board specialists on visits abroad, and this may provide additional opportunity to get first-hand information. Moreover, every effort is made to encourage translators to go to exhibitions of mining equipment or apparatus used in the mining industry, especially if they are held in London. A great many of these points will show you that we have tried to provide what Dr. Mackay called for this morning—as much background as possible for the translators—to tell them why they are being asked to do a particular job and what use a given translation is likely to be put to. In addition to all these direct methods of instruction, a good deal of emphasis has been placed on the provision of the widest possible choice of 'background literature', such as reference and text books, charts and the like; most of the standard technical and scientific journals in our field are received and read by the translators, who thus keep abreast of the latest developments. This is in addition to the normal practice of furnishing an adequate number of dictionaries covering the languages and subjects which have to be handled. We have been at pains to provide a very wide choice in the office, which can be drawn on by any translator as he needs it.

It has also been found—and I refer to it because it is in the Unesco report—that mutual assistance by translators can be very helpful. This is not always encouraged, but it is often of considerable benefit for a translator to put a knotty point to one of his colleagues in the same room, or perhaps to discuss it with the Head of the Section, and almost always the second translator—coming to the subject with a fresh mind—is able at the very least to make some useful suggestion, if not to give a complete answer to the question. In this way, a good deal of team spirit has been produced in the Section, which now numbers eight translators.

I would here point out that, in my view, one of the cardinal virtues of a good translator—and one in which he can be trained, or, even better, can train himself—is that of humility. By this I mean that the translator who is prepared to say 'I don't know', and to ask advice, is far less likely to make a mistake than a man who thinks 'Oh yes, I know that simple word' and does not look it up; the second man believing himself to be familiar with it can very easily overlook one of the more unusual meanings and, as a result, mistranslate the phrase in question. This may account for some of the mistranslations that shock the specialist when he reads the paper.

I am well aware that the Unesco report shows that opinions on the value of collaborative translation are divided. In our own case it has been found that the various measures have been highly beneficial within the framework of an office situated at the Headquarters of a large organization, since this ensures that translators have easy access to subject specialists in all the fields to be handled. If it is borne in mind that the range covered is very wide indeed—embracing a large number of different fields of research and development in theoretical and applied science and technology—and that this wide range is dealt with by professional linguists, accustomed to the translation of technical and scientific papers, but who have no highly specialized knowledge of the subjects in hand, then I think it will be agreed that any success achieved by the Translation Section of the National Coal Board in providing reliable and accurate translations must be attributed in large measure to the steps I have outlined above.

2. SOME PRACTICAL PROBLEMS ENCOUNTERED

The first point is that we staff the office with professional linguists, and it may be profitable to discuss the reasons for this.

It was suggested at the beginning of the Section's existence that there might be a case for employing a mining engineer or a coal scientist who had one or two foreign languages. The first practical objection to this proposal is that there is never sufficient work in one field to employ fully the time of a translator specialized in one particular subject. Furthermore, it was maintained at that time—and our experience over a period of six and a half or seven years has not brought to light any evidence to change our view on this point—that a really capable translator has an adaptable mind and is capable of grasping without difficulty at least the essentials of a new subject; this is the more true in the particular situation of our office within the organization of the Board, in that we have the close collaboration of the subject specialists themselves. Once the translator has obtained in one way or another the basic knowledge of a subject, it is a relatively simple matter for him to master the jargon.

There is, however, a further very telling reason. It is infrequent that a trained scientist or engineer has the command of a foreign language that a professional linguist will have. I admit that it is not impossible, but it does not often happen. The consequence is that a specialist—say a ventilation engineer—may translate an article in his own particular field, for example, from German; his expert knowledge will tend to outweigh his relatively less complete knowledge of the language. It will be relatively less than that of the linguist and he may therefore misinterpret the author's intentions. Lest this should be thought an exaggeration, put forward by a practising linguist to boost his profession, I would assure you that I can quote actual cases where this has occurred. It is true that the errors produced in this way are not, as a rule, very important, but they may be such as to falsify a quite substantial part of the author's argument.

Furthermore, this imperfect knowledge of the language may make it quite impossible for the specialist to deal with badly-written, ambiguous or misprinted statements, such as we find in almost every technical journal at some time or another.

I have, therefore, no hesitation in saying that provided a translator has a knowledge of a given language to Honours degree standard—and I emphasize the word standard, for reasons I will give in a moment—and that he has the adaptable and retentive mind necessary for success of his task, he will, in the right conditions, be fully capable of carrying out accurate technical translations. In this context the term, 'right conditions', means working with the access to the specialists and with the provision of the various aids outlined in the first part of my paper.

I emphasized the requirement of knowledge of a language to Honours degree standard. This is a minimum requirement and needs perhaps a little amplification. The capacity to translate may be likened to some extent—and Dr. Mackay did liken it—to the faculty for doing cross-word puzzles such as those which appear daily in *The Times*. This is a question of 'the kind of brain' one has, and is additional to and independent of the knowledge of the language which is being dealt with. It implies a capacity for balancing probabilities in determining the exact meaning of a word which is unknown and cannot be found in the dictionary, or of filling in gaps and grasping at small clues or allusions to what a word is meant to convey and so to obtain an indication of the meaning of a phrase or even of a whole sentence or paragraph.

The standard of knowledge of the language must, at the very least, be that of an Honours graduate, after two or three years of residence in the country where the language is spoken, or of a similar period of continuous and practical use of the language which has been studied academically. It may very well happen—and in practice most certainly does—that a good translator (i.e. one with the 'right kind of mind') has a very full knowledge of one or two languages, surpassing the Honours degree standard, without his ever having graduated from a university in those languages. Conversely, on occasion, Honours graduates without the additional 'crossword-puzzle' mind may prove to be quite unsuitable as translators. This is not a general rule, and is not easy to demonstrate, but I think those who have any experience of running a translation office will agree in general with this analysis.

Another point, of considerable importance in assisting the translator in his work, is the establishment of confidence and understanding on the part of the specialist in the capabilities of the translator. You may consider that this is stating the obvious, but from experience I can assure you that it is forgotten far more often than one would expect. It would, in fact, seem that it is often obvious practical points of this kind which are forgotten.

In the first instance, it is exceedingly difficult for a specialist scientist or engineer, who has no previous experience of close work with capable translators, to realize that a good translation—I assert this quite firmly—can read as clearly as a paper on the subject written in English in the first place and even, not infrequently, more clearly. This very difficulty is, in fact, one of the factors which cause so much confusion in the whole field of specialist translating today; until we have cleared away this difficulty and some of the others we cannot hope to make progress very rapidly. However, once the possibility of translations of such quality has been demonstrated to the specialist, his confidence will be gained and the potentialities of translating in his own field will be much clearer to him.

A further factor in establishing this confidence lies in the approach made by the translator to the expert. I have spoken elsewhere of the 'humility' which should mark a good translator; this is, in fact, a desirable virtue in any specialist. In his Presidential Address to the Institution of Mechanical Engineers, given last October, Sir George Nelson said—'Unfortunately, it is a habit of many designers, engineers and others to be reluctant to disclose their lack of knowledge by consulting other people. I believe this is a disastrous outlook, for one should be ready to acquire knowledge constantly throughout one's life'. If translators try to take to heart a principle of that kind they will have the ready help of the specialist at any time. I do not know of any case in our organization where a translator has met with a rebuff from a specialist, when approaching him for advice, frankly admitting ignorance of his special subject.

In connection with this question of the 'quality' of translations, I should like to draw attention to an attitude which is frequently adopted by specialists when asking for a translation. I think that many translators and Heads of translation bureaux will recognize the kind of thing I mean. In asking for a certain paper to be translated, an expert will say—'All I want really is a rough translation—you know, old chap, I shall understand what it means'. This is often, not to say always, a very wrong and dangerous procedure. I fully appreciate that a specialist may wish for a rapid translation, especially if the article is connected with research on some special job on which he is engaged at that moment; I also realize that the suggestion may be born of a desire to avoid giving the translator too much trouble. Sometimes, I wonder! For this, I am, as a translator, duly grateful, even though the desire very rarely seems to be realized!

The trouble is that the idea is based on a misapprehension. Translation is all too often considered by people who know little about it to be a mechanical operation, involving little if any skill or reflection. As a result, it is thought that a rough draft, which has not received over much care or polishing, must be less onerous to produce than a carefully-edited version. This is quite untrue, in fact. The essential task of the translator is, on the contrary, to understand first, to the best of his ability, what the author is saying; then—and then only—will he try to express clearly in his own language the author's thoughts. It is, therefore, dangerous in the first place to the translator to tell him to do a rough translation, as he may—I do not say he will—content himself with a superficial reading of the article and his version will be correspondingly faulty. What is more, a rough translation—with passages or words translated in the way which first suggests itself and not after due reflection—will, or can, be most misleading to the specialist when he comes to read it. Moreover, this approach may well—and I believe in many cases does—engender exactly the opposite impression to the one I have suggested as desirable, namely that the specialist should be convinced that a really good translation can be as clear as though originally written in his own language.

The same misapprehension also frequently leads specialists to expect translations in a ridiculously short time, although the approach to a technical problem by the same man would be different. For instance a design engineer will know that the preparation of a project for a particular type of installation will involve a certain basic minimum number of calculations and estimates, for which he will require a certain minimum period of time. A winding engine, for example, having a daily capacity of 5,000 tons would not require a great deal more time in the first stages of computing and estimating than one for a performance of 2,000 tons per day. A similar factor is involved in the preparation of translations, in that there is a physical limit to the time in which any paper can be translated, whatever the language and however difficult the subject may be. Of course, it is much more difficult to express this factor in terms of figures, but it has a very real significance in timing a job. In fact, the translator should be encouraged to insist that a reasonable amount of time should be allowed him, otherwise, if he allows himself to be 'hustled', no one will be satisfied with the results.

You will, perhaps, by now be saying to yourself—if you have not already been doing so for some time—that instead of talking about the training of translators, I am telling you how to educate scientists and engineers to work with them. This is, in fact, deliberate, as I believe that it is vital for experts and translators to understand each other's problems, if their work together is to be of any use.

Perhaps I may be forgiven, while on this point, for referring to another very considerable difficulty which is constantly met with in the fields of scientific and technical translating. It is my experience over a long time—and the unanimous view of my entire staff, as well as of many translators in other organizations—that the average scientist or engineer who publishes articles in the specialist journals may be—and often is—an atrociously bad writer. There are, it is true, notable exceptions, but as a broad rule this statement holds good; whatever the language and, so far as I can judge, whatever the subject may be. This is a very serious hindrance to understanding what an author may have to say, even without the further complication of preparing a translation.

3. MEASURES TO BE TAKEN

I have tried to deal with a few practical problems which have been met with. I think you will have recognized some of them from your own experience; I should now like to come to the more practical part of the paper and to suggest the steps which we have, over the years, come to think are the most important to be taken at the moment.

First of all, I would enter a plea for a much more practical approach than has often been given to the subject. Much that has been written about translating, especially since the war, and in particular about the translation of scientific or technical documents, has been far too theoretical and has only confused the issue. No doubt, information theory and research in terminology have their place in academic research; nevertheless, these must surely be elements of long-term research, and can, in my opinion, contribute little at the moment, at any rate, to the solutions of the day-to-day problems which face us. Our specialist and research staffs (speaking particularly for the Coal Board) cannot afford to wait for translations of the papers they wish to read and many large organizations will be in the same position; consequently, we have a job to do, and it must be done quickly and efficiently. For this reason, the measures which I put forward below as being most urgently required are, I submit, practical in nature and therefore most likely to make a positive contribution in this field.

1. I believe that it would be very beneficial for Unesco, together with the appropriate national bodies—such as, for instance, the Institute of Linguists, in this country—to make a determined and systematic effort to bring to the

notice of all users of translations the many practical difficulties in this field, some of which I have sought to sketch for you. This would do much to clear the ground, and would be of benefit to translators and readers of translations alike.

2. While good work is being done by bodies such as Aslib in the establishment of national registers of translations, much more can and must be done. There is a good deal of resistance in my experience to what is called by some people 'declaring one's interest' and this in many cases must be overcome. There must be an area in a given industry or field where commercial interests—the possibility of taking out patents and the like—will preclude disclosing one's need of an article. But these cases are much rarer than is often claimed. Every effort must be made to eliminate the duplication of time-consuming and costly translation work, partly for reasons of economy and partly—and perhaps principally—because it is most frustrating and disheartening to a translator to discover that such duplication has occurred, after he has laboriously worked through a complex technical paper.

3. Attention has already been drawn to the fact that there is a very marked lack of up-to-date and accurate technical dictionaries in almost all fields. Here again, much might be done by a concerted and systematic effort. For one thing, I would very much welcome the preparation of multi-lingual glossaries, covering a very small field in the principal languages likely to contain articles on that subject. The series of specialist dictionaries being published at present by Elsevier's does much to meet this requirement, although I had in mind glossaries covering even more restricted fields. The International Electro-Technical Commission has begun work on a series of excellent multi-lingual glossaries, which might in many respects serve as a pattern in this work. In our own sphere, one such specialist glossary—for coal preparation technique—has recently been published, and another—dealing with strata control—is in the proof stage. These are essentially practical glossaries—in this instance, in English, French and German only—and they were prepared by a committee consisting of subject specialists and linguists in the coal industries of Great Britain, Belgium, France, Germany, and Holland. They contain a large number of terms not found in any existing technical dictionary, and current only among the specialists in these particular subjects. Other valuable works of this kind are the series published by Freeman in Germany—his *Elektrotechnisches Englisch,* for instance—and the parallel German-English terminologies of which to my knowledge only two or three were published by Murby's a few years ago.

I have tried to approach the complex and confused field of specialist translation from the essentially practical point of view of one who is responsible for providing engineers and scientists with translations in their own fields of activity. I am conscious that I have done little more than to point to a few of the more obvious difficulties; and that much more could be done to meet them and to train or assist translators in their work. Certainly much still remains to be done. In fact, in this as in many other activities, we do well to think of Chaucer's words in the *Parliament of Foules*:

> 'The lyf so short, the craft so long to learn'.

I would like to acknowledge the suggestions and comments made by a number of my colleagues who read this paper in draft form. I would also gratefully acknowledge permission granted by the National Coal Board to read this paper, and would point out that the views expressed are my own and do not necessarily represent those of the Board.

CHAIRMAN'S INTRODUCTION

The CHAIRMAN, Mr. E. B. Uvarov, said that when the Conference was being planned, it was thought a good idea to include a paper on the education and training of scientific and technical translators. After second thoughts, this did not seem to be such a good idea, as it began to look as though the paper would be on something which did not exist. It was, in fact, probably true that most, if not all, translators were either doing the job part-time or if they were doing it full-time had become translators through some accident rather than by design. As a result, they learnt their job the hard way and therefore translation would be wasteful and inefficient.

Fortunately, however, it had been found that in the Translation Section of the National Coal Board, headed by Mr. Readett, translators were trained, helped and guided.

DISCUSSION

MAJOR R. BIGWOOD (Pergamon Institute) said that, speaking as a professional linguist of a good many years' standing both as a civilian and in the army, he agreed with most of what Mr. Readett had said.

The dictionary was an admirable tool, and he did not believe any good professional linguist could work without one. His only complaint was that there were not enough good ones. There was one series that Mr. Readett had not mentioned—the very excellent Schlomann-Oldenbourg series which he had used in the textile trade.

It was his experience that a good professional linguist need not be an honours graduate. He had been in charge of the uncommon language department in Bermuda during the war, about fifty odd of the queerest collection of people. One or two were honours graduates, among them some who could barely cross the street. A practical linguist was better than a theoretical one.

Humility was a quality that should be stressed. It paid in every respect never to be afraid to say one did not know what something meant. It was silly to be too conceited to admit to not knowing some particular point.

MR. E. HAYES (Crookes Laboratories Limited) said it was easy for a body like the National Coal Board, which had everything in its own hands, to compile glossaries for specialist subjects, but for other branches of science and technology it was not so easy.

He suggested that the scientific and learned societies should undertake this job. They had started in the Pharmaceutical Society, in co-operation with the Librarian, to compile a card index of Russian names of drugs. It was proposed to expand this and if possible to form a circle of people who were interested. If the Chemical Society, the Geological Society and similar societies would adopt such a course, the library of each society would have a card index of up-to-date translations of technical terms which might be useful to the compilers of dictionaries and might also be equated with the corresponding terms collected by official bodies in other countries. There seemed to be no reason why this could not be done, provided the learned societies were willing to co-operate.

MR. A. H. HOLLOWAY (Ministry of Supply) said it was fascinating to see how closely Mr. Readett's establishment compared with his own. There was perhaps one point on which he would join issue with him, and that was the insistence on the use of professional linguists. It was his experience, so far as it went, that it was easier to teach a scientist who had some knowledge of linguistics than to teach the professional linguists the language and, what was far more important, the thought of science.

Multi-lingual glossaries were undoubtedly needed, but unfortunately, in some subjects, by the time even a uni-lingual glossary had been produced, a good deal of it was getting out of date. By the time a multi-lingual glossary had been produced, a good deal of it was most horribly out of date. However, he hoped nobody would be put off producing glossaries by thoughts like that!

MR. W. E. CLASON (N.V. Philips Gloeilampenfabrieken, Holland) said that though he was not a translator or a linguist he would like to say something about the training of translators. It was very difficult for the head of a general translation department to give training, because one day the subject might be radar and another economics. A translator who was going to one of the main industrial divisions could, however, be put behind a machine for six months to learn how it operated.

He had been the editor of three glossaries in the electronic field published by Elsevier, and he had made an arrangement with them that he did not want to produce dictionaries without definitions. If the translator was to know what he was talking about he must have a definition of the term included in the dictionary.

MR. A. J. DICKSON (Central Laboratory, George Wimpey and Company Limited) said the question had been asked whether the translation department should be part of, or separated from, the library service. Most people seemed to agree that the best combination was linguist and specialist. He himself worked with specialists and was able to ask them on the basis of language knowledge, 'What is the thing that works like this?' 'Oh, yes,' they said, 'a wash chopper bit.' If that kind of collaboration could not be secured the specialists would have to be taught linguistics.

There was no formal training in this country. The universities rightly said they did not train people for jobs. In his young days he had thought this was bad, but he now knew better. Could there at least be a university institute for translation? If not, could people be sent to various centres? The Saar, for example, had an interpreters' and translators' school, as had many continental universities.

Finally, he was all for micro-glossaries even if they contained only two or three words. He hoped that Unesco would collate them.

To turn to the tabooed subject of mechanical translation, he thought micro-glossaries would be the basis in the future for this type of translation, and for Dr. Urquhart's benefit he hoped the meta-language would be Chinese.

DR. M. GOYER (R.A.E., Westcott, Bucks) said that in view of the interest in Russian science, she was asked by her Establishment to give lessons in Russian to the scientists, so that they could see for themselves whether there was anything in Russian scientific literature that was worth translating.

It had been suggested that it was only possible to learn well while one was at school, but this was not so at all. If one had a definite objective, one could learn quickly, and she had found the scientists were most interested and were learning quite well. Their memories might not be quite so good and the routine was a little more irksome, but nevertheless it was quite untrue to say that one could not learn after the age of thirty.

As to the material which should be used, this did not matter very much so long as it was varied. If they were reading rather dull childish books all the time the scientists would soon become bored, but they would remain interested and would make progress if they were given, for instance, an interesting article in a Russian newspaper about work that had been done on the satellites.

MR. G. W. THOMAS (British Petroleum Company Limited) said that in the research station where he worked they had inaugurated a series of lectures last September on learning technical Russian. A fully qualified lecturer from London University was in charge, and he was giving a series of thirty lectures, one night a week, one-and-a-half hours a night. The aim was that at the end of the course the students should be able to translate technical Russian adequately.

It would be interesting to know whether similar educational schemes had been introduced in other companies.

PLENARY SESSION

The CHAIRMAN, in opening the discussion in the Plenary Session, said that this was the most important part of the Conference. The object was to consider what was to be done about a very serious and confused situation and to catalyze action. If they merely listened to three very interesting papers, rode their own pet hobby-horses in the discussion, had a nice lunch and went home, they would have wasted their time and achieved nothing beyond demonstrating their inability to cope with the problem.

The situation was one which must be tackled both nationally in this country and internationally. They must therefore think on a bigger scale than their own department or agency or organization.

He believed that nationally the proper body to consider what should be done was Aslib;

even if this might be debatable, it would be agreed that Unesco was the proper body to reach decisions internationally.

This was an Aslib Conference, and they were happy to have the support of Unesco in the person of Dr. Holmstrom. They had with them representatives of D.S.I.R., Government Departments, research institutions and translation agencies and other bodies with a stake in the problem. That was why he believed the Conference should initiate action and why he would urge those taking part in the discussion to bear that purpose in mind.

The aim should be to crystallize ideas in the form of definite recommendations to Aslib and Unesco, and possibly to the Washington Conference to be held later in the year, and to other bodies.

The Conference must certainly do more than air views at this stage, because if this big opportunity were missed he doubted whether there would be another.

He proposed to start by inviting the people on the platform to speak for a few minutes, after which the discussion would be open to the floor. Any definite proposals would then be put to the Conference and there would be a final summing up.

MR. READETT said he would like Mr. Hayes to come and see whether they had everything at the National Coal Board!

Mr. Holloway had said it was easy to produce a glossary in 'slow-moving' terminology. To illustrate that it was not always so easy he would tell a story. There was a simple piece of apparatus called a two-way cock. The French called it a three-way cock because, being logical, they mentioned the way in as well as the two ways out. He did not know a single dictionary that gave the right term.

Perhaps the best answer to the question whether the translation office should be separate from the library was that his own was separate, but this was probably begging the question. It would have to be decided according to the organization in which the office was situated.

DR. HOLMSTROM reiterated the desirability of making definite recommendations on which action could be taken. Dr. Goyer had given an example in expressing approval of the pre-war Engineers' German Circle in London. On page 2 of the points for discussion in paragraph 5.1.13 and in the Unesco report itself this was referred to. Perhaps Dr. Goyer might care to formulate and move a resolution that Aslib should encourage the formation or restitution of the Engineers' German Circle.

MR. LIEBESNY said that many of the speakers in the discussion had mentioned the difficulty of tackling subjects they knew nothing about. The solution was not to tackle them. He would not dream of doing a translation on biology because he did not know anything about it. It must be made clear that they were not just translators, but scientific and technical translators.

The tabulation showed that cover-to-cover translation was still a fairly cheap method. These translations would sell purely on economic grounds, and even if the price went up they would still be cheaper than many other methods. He knew of twenty-four cover-to-cover translations at the moment, and Dr. Urquhart assured him there were more since the compilation of the list. They should be indexed in the Aslib Index together with all the other commercial translations, such as those of the Pergamon Press, the medical journals, the Consultants' Bureau, the *Engineers' Digest* and so on.

The Aslib Electrical Translators' Sub-Committee were publishing an electrical translators' bulletin which covered a little more than purely electrical engineering: they occasionally included glossaries and newly-found equivalents of words. It was proposed to widen the scope of the bulletin to include other information. This would be one means of publicizing glossaries, and he moved that Aslib widen the scope of the Electrical Translators' Sub-Committee to include translators in other subject groups.

The CHAIRMAN said that as Dr. Mackay did not wish to speak the meeting was open for discussion.

MRS. L. PRESSL (Institute of Documentation) said it was a pleasure to come from the German Democratic Republic to attend the Conference. The same problems existed in both countries, but the Institute was well on the way to solving them. Facilities were available for making translations from all languages into German available to all inquirers. This was the only way to eliminate duplication. Anybody wishing for a translation had to inquire whether the material had already been translated or not, and her Institute wished Aslib every success in its work.

Before the present arrangements were made, nearly 120,000 translations were registered, 40 per cent being of Russian origin. Double translations had been avoided on nearly 40,000 occasions.

Mr. J. Bird (Aslib) said that there was some misapprehension about the Commonwealth Index of Translations of which Aslib was the British agent. Dr. Mackay had said that it was inevitably somewhat out of date. This was, of course, true. It was unlikely, for example, that an article in a February journal would have been translated and reported in the same month. Aslib had an arrangement with certain contributors to the Index under which the contributor sent in a notification of all translations he intended to make, with the request that he should be notified at once if there was a record that any of them had been translated. This did not definitely commit him to making it but announced his probable intention. In this way an entry was made in the register as soon as any of these contributors contemplated making a translation. If anyone else wanted the same article translated they might be able to share the cost.

Cover-to-cover translations were, of course, indexed by Aslib.

He had been working for the present conference for about five years and was very glad that it had come off. Being in charge of the register of translators, he had had it borne in on him more and more that there was a very real discrepancy in many cases between the worth of a translation to the person ordering it and what it cost the translator in terms of labour and experience. He had heard both sides. He had heard the buyers at Aslib meetings complain about the Institute of Linguists' rates and so on, and translators at Institute meetings complaining about the rates they were offered. He was convinced that in many cases this discrepancy was the real cause of the trouble.

He hoped this would be discussed and he thought that any means of getting translations done on a co-operative basis, including cover-to-cover translations, would be welcomed by both sides.

Mr. K. R. Lenel (International Combustion Limited) suggested that Aslib's list of translators should be enlarged. He thought all the organizations that were members of Aslib should send in the names of their staff and indicate in what fields they were experts. It was not enough to know that they were linguists. If it was known in what they were experts they could be approached on odd expressions by telephone. This would be of great help.

Mr. M. J. Kerr (Standard Telephones and Cables Limited) said the quickest way to produce a number of scientists who could read foreign periodicals and papers would be to organize language courses by leading companies and institutions. F.B.I. and Ministries of Supply and Education should convince large companies of the need for such training courses, and that they were of essential and national importance. (Smaller firms could send their staff members to the courses run by big companies.) This method had its additional advantages: firstly, the foreign language could be adapted from the start specifically to the particular field of science or technique of the location: secondly, a glossary for this particular field could be compiled by team work of teacher and pupils. The results could be obtained in *one year's* time.

Dr. W. E. Clason (N.V. Philips Gloeilampenfabrieken, Holland) said that he would like first to make a few commercial remarks. One could, in his opinion, never pay enough for a good translation. One did not lose by it. For instance, his company had their Annual Report translated into English, French, Spanish and German, and it cost about £3,000 to publish. It was a most expensive visiting card and it had to be paid for.

Secondly, he did not believe in part-time translators. He regarded translation as a professional job which must be paid for in accordance with the normal standard of living.

There were two different angles to the problem of translation. In England 80 per cent of the translations were from German, Spanish, French and other languages into English. On the Continent the position was quite different. Dutch had to be translated into English, Spanish, German and so on and for this Englishmen, Spaniards, Germans and so on were engaged. Russian did not come into the picture because about 100 per cent of the scientific people spoke English, French and German and about 20 per cent of the research staff had learnt Russian, so this was not a problem.

Mr. E. Gros (Individual Member) said that he did not believe there was any hope of an international language ever being generally adopted. However, it should not be difficult to bring about a general agreement for including U.D.C. classification numbers in the lists of contents of at least the more important publications of the various countries. He considered this would facilitate to some extent handling of and searching for information published in various languages.

The volume of scientific information published in Russian, as well as in other languages, was increasing at a rapid rate. Even if unlimited finance were available, it would not be possible to recruit a sufficient number of qualified people to cope with all the translation work required by industry. Complete cover-to-cover translation of journals was unreasonable and wasteful since every journal contained a certain amount of material which was of purely local interest and most of the articles could be considerably shortened without losing any useful information. It was quite wrong to state that cover-to-cover translation eliminated the element of selection since cover-to-cover translation of, say, twenty periodicals out of ten times that number was in itself a selection. It would be far more useful to publish brief cover-to-cover abstracts of a larger number of journals with as little delay as possible and then to translate only those articles for which there was a definite demand.

He did not entirely agree with the build up of Mr. Liebesny's figures as regards translation costs. Whilst he would not deal with absolute cost figures, he himself had found that the order of cost is roughly the reverse of those specified by Mr. Liebesny. According to his experience, the cost was highest when a translation was done by a scientist in manuscript and lowest when a scientist, who was very familiar with his subject, dictated the translation to a really good shorthand typist. His conclusions were based on a ratio of the cost of the translator's time to the cost of the typist's time of 2½ : 1 to 3 : 1.

In some fields translations by linguists who are not scientists or engineers might be satisfactory, particularly if the subject matter is of a descriptive nature. However, in the general case and particularly for information which was highly technical and of a non-descriptive nature, as for instance, physics, chemistry, mechanics and various other scientific and engineering subjects, it was quite hopeless to expect a translation of a satisfactory quality from people who were not scientists or engineers. He rated knowledge of the subject very much higher than knowledge of the language from which the translation was made.

In organizations not possessing an adequate number of well qualified translators, it might be more advantageous to supply to the user a draft of the unpolished translation made by an inadequately qualified translator and for the user to specify the part of the text he was particularly interested in and then for this part to be retranslated by a more qualified translator. Alternatively, if a well qualified translator was available, he should be given the discretion to condense appreciably the translation and omit from the start translation of those parts of the paper which he believed to be of little use to the particular user.

MISS M. GOSSET (Atomic Energy Research Establishment) said she was not a translator but a librarian with a translating department in her library. She was concerned about duplication. There were people who refused to notify Aslib of translations because of commercial secrecy, but Aslib could ensure that the name of the organization issuing a translation was not disclosed without permission. We should concentrate on making the national bodies efficient rather than spend money on international agencies.

At Harwell they saw various proposals from various international agencies who were all wanting to do the same thing. She could only see a multiplicity of translations of translations of translations going on all over the world. She proposed that the meeting pass a resolution that national bodies should be encouraged in every way possible to become more efficient, and in particular that in this country every organization doing translations should be strongly urged to notify Aslib when they *started* one.

DR. D. J. URQUHART (Department of Scientific and Industrial Research) said he thought the Conference had tried to cover far too wide a field. Having regard to the practical problems, therefore, he would propose as a sequel to the present Conference that Aslib should organize a conference to consider what measures should be taken to make Russian scientific and technical literature available in English.

MRS. E. HERBORN (Bristol) said that she did not know whether it would be financially and practically possible, but she would like to urge that as a result of the Conference steps be taken to found a translators' institute where young people leaving the university could take an additional course to ensure that a permanent stream of young translators came into the profession. This country should not be behind America, and they had such institutes there and in other countries. To her mind English and American were slightly different languages.

DR. E. ANDREWS (Johnson and Johnson (Great Britain) Limited) said that she agreed with Dr. Holmstrom about the importance of reviews of foreign literature in industry, but thought they often did not provide a balanced picture, being slanted to suit the special interests of the firm or industry concerned. It would be useful to outside readers if special mention could be made in the title of the aspect from which they had been made. For instance, it might be said that a review on recent German developments in plastics had been prepared with special emphasis on high-temperature properties of polyesters. This also applied to shortened translations which could be made generally useful if it were pointed out from which aspect they had been abbreviated.

The half-life idea of Dr. Mackay was apt, but the half-life of a translation was a function of the half-life of the original paper. A fundamental original work would have a longer half-life and the same would apply to its translation.

The economics of a discussion with the user prior to translating with respect to possible abbreviations depended on the time value of the user. If he was a research director, his salary might be three or five times that of the translator and it would obviously not be economic to take up his time in order to save the translator's. If, on the other hand, he was a young research chemist it would be economic for him to spend time in shortening the work of the translator by discussing with him what was wanted and what could be omitted.

DR. E. PIETSCH (Gmelin-Institut, West Germany) proposed that Unesco find a way to introduce students in the field of the natural sciences and technology to foreign languages as early as possible. In Germany and, he thought, other countries there was a tendency to rely on the national abstracting journals. Perhaps Unesco through its national committees in the different countries could encourage the study of foreign languages by students in their first or second semester at the universities.

He agreed with Miss Gosset as to the importance of avoiding duplication. At the same time, he thought an international co-ordination bureau was required to enable national centres to co-ordinate their work. Otherwise, as Miss Gosset had said, there would be translations of translations of translations and the whole situation would become quite impossible.

MR. J. K. CLARK, speaking as a private individual, said he was concerned primarily at present, as a professional engineer, with formulating commercial policy in the export field. Perhaps people tended to overlook the fact that the object of a translation was to place information at the disposal of people who were going to make a decision of some kind, either commercial or technical.

Whilst he appreciated the value of a fine translation, correct in every detail linguistically and technically, he wished to emphasize the importance of making information available as speedily as possible to the engineers and business men who have to make the decisions. A perfect 100 per cent translation, whilst desirable, was not usually essential.

There was great scope, he believed, for mechanical translation by means of computers, in bringing cover-to-cover translations cheaply and quickly to engineers and business men in this country.

Twenty years ago he had been the only English student in the Faculty of Engineering of his university who had been sufficiently interested in foreign languages to take an active part in the Deutscher Verein and Cercle Français of the university and he would be interested to know what is the present situation. If it is the same, something surely should be done to encourage engineers and scientists to join in linguistic social activities which could have such an important bearing upon their attitude towards foreign languages and foreign people and business in general.

In the closing phase of the Session, the CHAIRMAN said that there were several points that had occurred to him while listening to the conference.

The first was the question whether anything that was worth publishing was worth translating, or conversely whether, if it was not worth translating, it was worth publishing in the first place?

Secondly, it probably took at least as long to translate a paper as to write it in the original language and the cost of the two operations was probably of the same order. If this was true, and if every publication should be available to every scientist in his own language, it would mean doubling or trebling the present fantastic bulk of publications. Did that make sense?

Thirdly, it would seem to be the wrong approach for translations to be done largely by one translator for one or perhaps a few readers. The situation was aggravated by incomplete indexing.

The right path to a solution as he and some other people saw it could be large-scale cover-to-cover translations, subsidized and possibly Government-sponsored, to be sold at reasonable prices and readily available in libraries.

These were the general points that seemed to have emerged, even though they might not have been expressed in so many words. He did not propose to summarize the discussion but would now come to definite proposals.

PROPOSALS

The following proposal was put forward by DR. D. J. URQUHART (D.S.I.R.) and seconded by MR. P. F. COLE (British Petroleum Company Limited):

> THAT as a sequel to this conference Aslib should organize a conference to consider what measures should be taken to make Russian scientific and technical literature available in England.

An amendment suggesting that the scope of the conference should be widened was proposed by Mr. Clason but, after discussion, was withdrawn in order that it could be put forward as a separate motion. *Dr. Urquhart's proposal was then put to the vote and carried.*

The proposal made by MR. W. E. CLASON (N.V. Philips Gloeilampfenfabrieken, Netherlands), seconded by MR. A. T. PILLEY (The Linguists Club), read as follows:

> THAT Aslib, in conjunction with the Institute of Linguists, should organize a further conference on translation problems of wider scope and longer duration.

The motion was carried by a majority of two to one.

DR. A. L. MACKAY (Birkbeck College) proposed:

> THAT Aslib circulate, in the form of a questionnaire, the points issued in the materials of the present conference, and circulate the results of this questionnaire.

The motion was carried.

RECOMMENDATIONS AND SUGGESTIONS

In the course of the discussion at the end of the Plenary Session some useful recommendations were made that did not result in formal proposals.

MRS. M. R. KNIGHT (Road Research Laboratory) suggested that the preparations made for both conferences should differ from those made before the present conference. Otherwise the discussions would be a complete waste of time. The papers were extremely interesting, but they were not relevant to the problems and there should be well-prepared and succinct papers ending in definite proposals. In subsequent discussion Mrs. Knight confirmed that it had not been her intention to criticize the preparations for and running of the present conference but merely to emphasize the need for careful thought so that time should not be wasted.

The Chairman said that there had also been a proposal that Aslib should encourage the formation of societies for the discussion of technical and scientific subjects in foreign languages, and in particular that steps should be taken to bring into existence again the former German Circle for Engineers. It was agreed that this would be useful but, in the case of the German Circle for Engineers, care should be taken to ascertain whether the originators of the Circle, believed to be the Institution of Mechanical Engineers, wished to retain their interest in it.

MR. B. G. WATTS (Crompton Parkinson Limited), who was present at the conference but failed to catch the Chairman's eye, submitted the following proposal by post:

> I propose that the British Standards Institution (and other National Standards Authorities) be invited to introduce a short glossary of the most important terms and in as many languages as may appear necessary in each case, into all of their published standards. This is obviously a long term policy and the necessary data can be collected gradually and published as may be convenient. (Amendment or when the Standard is revised.)

TECHNICAL INFORMATION IN THE MODERN WORLD

BY J. G. MALLOCH, D.SC.

Scientific Liaison Office, National Research Council of Canada

Aslib Scottish Branch Conference, Edinburgh, 7th February 1958*

I THINK it might be in keeping with Scottish tradition to base my discourse on a text. This is found in a poem by a Scot whom we can also claim as Canadian—John Buchan.

'Power deduced from powerless dust,
Nurture from the infertile grave;
Much the years may hold in trust,
Space a thrall and Time a slave.
Hark the boasting of the wise:
First are we of those that know!'

The remarkable thing about this stanza is that it was written in 1932—twenty-five years before Calder Hall, Sputniks and Explorers. It links wisdom with early information and forecasts modern developments.

We are in the middle of a century of tremendous technical advance. As the century has advanced the pace of scientific and technical progress has increased and will probably go on increasing. Even if we do not speculate on things that might be discovered, but confine ourselves to the reasonable prospects of successful completion of researches and developments now under way, we must come to the conclusion that the second half of the twentieth century will probably see technical advance rivalling that of the whole previous history of mankind.

John Buchan's 'power from powerless dust' is a reality. Space is not yet in thrall but it has been invaded. There is prospect of energy from controlled fusion of hydrogen with the possibility of deriving electricity directly from it, eliminating the thermal cycle which yields less than a third of the energy put into it. Materials with new and striking properties are constantly being produced leading in their turn to new methods of construction and new facilities for useful application in many fields.

These things are spectacular but we must not forget that nowadays science and technology affect every aspect of our daily lives—the beds we sleep in, the clothes we wear, the food we eat, the houses we live in, the transport we travel by, all owe something to science or to technical control. The arts and the humanities are not exempt—the artists' colours and the musicians' instruments are technical productions, the poet has his works read over the radio and even the classicist reads Thucydides more easily because a technologist has developed a better printer's ink.

The secondary effects of scientific development are enormous and far-reaching. Vast changes in employment are in progress. New skills are required and old crafts are becoming unnecessary. Whole new industries are being created. The human sociological and political problems which result must be met with wisdom and understanding by leaders in industry, finance, the labour movement and above all in government. Science, always international in its own character, has become one of the basic factors in international relations and will make increasing demands on those who are responsible for them.

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* By arrangement with the author, this paper has been abridged.

If the world at large is to benefit from the advances of science, and indeed if science is to receive the support which will make these advances possible, an appreciation of science and technology and its place in modern life must be part of the mental equipment of every individual and particularly of those who guide our destinies. Such an appreciation cannot be fully acquired late in adult life through reading a few books or listening to a few lectures. It must be built in to the fabric of thinking during the formative years of normal education. I am not advocating that everyone should be trained as a scientist or technician —far from it—but simply that it is necessary that all people, whether as members or leaders of the community, must know what science is, what it requires, what it accomplishes and the consequences that flow if the benefits are not to be partly thrown away through bungling and ineptitude. To get the type of general education that is needed, the schools and teachers must have available the basic technical information in the right form. The old dull text teaching Boyles law, the valency of oxygen or the bones of a frog to students, many of whom will never need to know, must be replaced by material which will convey the fascination of scientific discovery and a realization that it really means something to every individual whatever walk of life they may choose. This is a challenge that cannot be ignored if science is to have the intelligent public support which is necessary to its development and proper use. It should be a matter of concern to all those who have to deal with scientific and technical information.

Information has an important place in the mechanism by which scientific and technical development is achieved, whether this is through research, invention, or ordinary day-to-day improvements worked out in design offices and factories. The needs of the research man were fairly well met by the system of scientific journals and abstracts up almost to the beginning of the last war. The tremendous expansion of scientific work in the last twenty years, with the great outpouring of papers, many of which are greatly delayed in publication or never appear in standard journals, has materially altered the situation. The chemists are still fairly well served by their abstract journals with the physicists next. The biologists are badly off. By their own figures, the coverage of *Biological Abstracts* is only about 40 per cent and the publications of the Commonwealth Agricultural Bureaux cover only special fields, generally selectively. The industrial fields of applied science and engineering are virtually without adequate abstracting services. We are now realizing the vast amount of important scientific and technical information that is available in Russia and its satellites and in China which is scarcely touched by most of the abstracting services and is only available with difficulty in any form.

As the fields of investigation become more complex, the need for information from related but different disciplines becomes greater. Progress in nuclear energy and in jet and rocket propulsion is, to a large extent, dependent on advances in metallurgy and ceramics. The need for cross-fertilization between different fields is greater today than it ever was and the difficulties are also greater.

Another kind of information which affects both the administrator and the practitioner of science and technology is information about what research and development is in progress and where. This is no problem in the more specialized fields of fundamental science, but in most kinds of applied science it is becoming increasingly difficult for the people concerned to know about parallel or cognate lines of work in their own countries let alone in other parts of the world. This ignorance leads to unnecessary duplication and to much wasted effort. Scientific manpower is too scarce to be used in solving problems to which other people have found the answer or for investigators to be unaware of the existence of experience which might help them in their work. Since the war large numbers of new laboratories have been established and existing ones extended so that it is increasingly difficult for the applied scientist to know of their existence, particularly as the results obtained by many of them are not published promptly in standard journals. The scientists need some help and this is a suitable task for information services, but one which must be carried out by methods agreeable to the working scientists.

One of the most important aspects of technical information work is the promotion of the use of the results of research and technical information generally by industry. The discoveries of science only become of immediate importance to mankind when they are available for the general benefit. It will probably always be true that the greater part of industry, namely the small and medium sized firms, will not have the resources to keep in touch with new or even long established technical developments, and must have assistance from information services.

I have indicated the main areas where technical information of different kinds is required. In this modern world it is increasingly true that to be wise one must first be able to boast, 'First are we of those that know'. To bring knowledge to the wise and the not-so-wise there is need for middle men who are specialists in technical information. Some of these will be librarians and others will be what we are now calling 'Information Officers.' If they are to meet the modern needs, it is essential that they should take positive action towards their responsibilities. It is not sufficient for librarians to be mere custodians and accumulators of masses of paper. The librarian must strive to acquaint those whom he serves with the character of the information in his custody and to help his clientele to find answers to their technical questions.

The modern function of libraries is developing by evolution from an age-old basis, and the whole apparatus of scientific publication is gradually being overhauled. More novel is the world-wide movement for the establishment of information services to meet special needs, relying not only on published material and the assistance of the librarian, but dealing also with useful information wherever it may be found. These services are still very much in the experimental stage. It would be interesting to compare the developments in different countries, but my time will only suffice to tell you a little of what is being done in Canada and to indicate the scope of the international interest in this field.

Within the last year the National Research Council has grouped together in one branch all its services which deal with information, namely, the library, the public relations officer, the scientific liaison officers and the Technical Information Service. We believe that all of these, concerned with different aspects of the matter, can function more effectively working side by side under an officer who has charge of the whole field. Since half of these services have responsibilities to organizations outside the Council, a national committee has been appointed in an endeavour to increase their usefulness to the bodies which they serve. These administrative actions are a reflection of the importance of information services under present day conditions.

The library is the major scientific library of Canada and as such is operated as a national service. It has the usual direct and inter-library loan arrangements, but there is little that is unique. In conjunction with it a translation section is operated and an index is maintained of all the translations made of scientific papers in Canada. This section co-operates with the Commonwealth Index of Translations which co-ordinates the parallel work in all the Commonwealth countries. The corresponding centre in the United Kingdom is Aslib and it is possible through any of the centres to obtain information about any translation made anywhere in the Commonwealth.

The Technical Information Service was started during the war to make existing technical knowledge available to industry, and particularly to small and medium sized firms who have little or no resources for doing this for themselves. From the start it was realized that the key to success in this field lies in direct contact with the firms. Field men were appointed, working from offices scattered all over Canada, and visiting factories to ascertain their problems and to ensure that the information furnished by the headquarters in Ottawa is suitable and understood. As a result of nearly fifteen years experience we are convinced that there is no substitute for this personal approach. It is essential in this as in other kinds of information work to take an active and not a passive attitude. The value of the organization is proved by the constantly increasing number of inquiries and the number of firms who use the service time and time again. This national service is now closely linked with the technical information branches under the various provincial governments and its sphere of interest is broadening into the fringes of technology in such matters as work study and productivity. The information which is passed on to industry is gathered from wherever it may be found. Often a reference is found in the library; frequently the answer comes from another commercial firm or from a government department or laboratory; sometimes inquiries are made to a technical information service in another country or through one of the scientific liaison offices.

Scientific liaison is a war and post-war development. Quite a number of countries maintain offices in the U.S., somewhat fewer in London. The United Kingdom has scientific attachés at the Embassies in Stockholm, Bonn and Paris. All these offices are relatively new and no standard pattern of duties has yet emerged. Basically they are all responsible for stimulating exchange of scientific and technical information with the country in which they are posted. All of them, I think, place great stress on assisting scientific visitors to make contact with the people who can give them the information they are seeking. Here again personal contacts are of very great importance. As science has gradually become a factor in international relations the diplomatic function of the liaison officers or attachés has assumed greater importance and brings them in touch with the developments in international co-operation in science. I might refer to some of these which relate to technical information.

At the meeting of the Heads of States in Paris in December, one of the few matters of detail that was mentioned during the debate on scientific co-operation was the need for an improved flow of technical information and without doubt this will be one of the subjects to receive attention from the new Scientific Committee in NATO.

The Organization for European Economic Co-operation (OEEC) has been active for nearly ten years in the information field. One of its first actions was to initiate a documents exchange scheme which proved to be very valuable in helping to restore the channels disrupted by the war. It started a question and answer service through which it is possible to discover quickly in other countries information not available at home. It issues Technical Digests containing novel new ideas. The Digest is now translated into quite a number of languages. It has published a directory of sources of technical information covering all the countries of Western Europe. It has encouraged the setting up of national information services and has done very valuable work in putting these bodies in direct touch with each other so that there is now a great deal of informal co-operation. One of the latest efforts is to send a representative of the European services to Canada to work for several months in our Technical Information Service so as to be able to report on our methods in detail.

A major effort is now being made by OEEC to improve the availability of Russian, and other Eastern, scientific literature and information. It is trying to arrange for a pooling of the resources of the West in the procurement, translation and abstracting of the huge store of material we know to be available.

OEEC is probably doing more in the general field of technical information than any other international organization. Most of the others concern themselves with special aspects of it and are doing good work. You all know of the activities of F.I.D. Unesco is active in the field with a consultative committee on documentation. The International Council of Scientific Unions has an Abstracting Board which was interested first only in Chemistry, then in Physics and has recently extended its field to cover Biology as well. The U.N. and its main specialized agencies all do information work in their own fields and technical help is an essential part of the Colombo plan.

I have tried to focus what you all already know of the importance of technical information in this rapidly developing world. I have tried to show where the needs are greatest and I have barely indicated some of the things that are being done to meet these needs. All of us concerned with technical information have a useful part to play in bringing to reality the vast promise of science. Unfortunately Buchan's prophecy has not come completely true—Time is not yet a slave—and we must press on with our work to make technical information play a useful part of the modern world.

LIBRARIANS HERE AND THERE: A SYMPOSIUM

Summaries of three papers read at the conference of the Scottish Branch of Aslib held in Edinburgh 7th February 1958.

I

NORWAY

BY MISS L. SØMME

The post-war encouragement of wider public education by the Norwegian Government has greatly stimulated interest in, and need for, public libraries, all of which receive state support.

Training for librarianship is given at library school for both public and special librarians, and at present lasts three years. The present course is being reviewed, and contains a very wide range of subjects.

Concerning the library organization, Miss Sømme described the regional library service which consists in a central library for each county which distributes books on request to smaller libraries in its area. Mobile libraries are successfully used in the more populous regions, but economic and geographic limitations made their operation more difficult in the more isolated areas where they are most needed. Most libraries try to extend their cultural activities to include films, records and facilities for discussion and study groups. The final authority in all matters of library administration is vested in the section of Public and School libraries of the Norwegian Education Department. Trained librarians are few in Norway and so it is essential for the newly-qualified student to be able to maintain a close liaison with this headquarters organization.

In conclusion the speaker pointed out that the present aim of the public library system in Norway is to create an educated reading public, which is, she thought, to a large extent, already in existence in Scotland.

II

THE NETHERLANDS

BY MISS T. VISSER

Miss Visser began by commenting on the effect of the religious division, between Roman Catholics and Calvinists in the Netherlands, upon the Public Library system. It has caused an uneconomic duplication of activity, in providing Public Libraries for both denominations, and sometimes a neutral library as well. Although the libraries are financially partly dependent on Government and local government grants, they are governed by independent committees. Co-ordination is provided to some extent between the various libraries by the Central Association of Public Libraries which supervises the training of librarians and the general standards maintained. There is at present a two-year training course for assistant librarians, and a further one-year course for librarians, but the courses are under review.

The establishment of Special Libraries in the Netherlands has mainly come about since the war as a result of increased research activity in industry. An organization of Special Librarians comparable to Aslib was founded, but this is incorporated in the Netherlands organization of librarians to which all librarians belong. It is also responsible, in conjunction with the Netherlands Institute for Documentation, for the training of special library assistants and Information Officers. Special librarians must be graduates, and their training is therefore chiefly in library techniques.

The speaker closed with a more detailed description of the establishment after the war, the growth, and the working of the special library at the Central Institute for Nutrition Research T.N.O., of which she herself had had experience.

III

CEYLON AND KENYA

BY MISS E. DE SILVA

Miss de Silva pointed out that Public Libraries in both Ceylon and Kenya are still in the early stages of development, particularly in Kenya. In Ceylon, the library system is based on that found in British libraries, using the Dewey classification. The libraries are chiefly for academic purposes since, outside the colleges and university, the reading public is very small. Miss de Silva had observed marked differences in the social behaviour of readers in Cingalese and American libraries—in the one an atmosphere of hushed formality reigns and in the other there is complete relaxation and informality.

There are very few libraries in Kenya of any kind but a recent plan has been suggested for the establishment of branch libraries throughout the country. Most of the demand is for books in English.

Comparing her experiences of work in Scottish libraries with that in Kenya and Ceylon, Miss de Silva found that Scottish libraries are much more popular with the public, have a wider range of reading material, bigger staffs, and less responsibility allotted to assistants in the libraries. The establishment of libraries in any country is a result of demand by an educated public, and since Kenya and Ceylon are still relatively backward in this respect, the library movement is still in its infancy in these countries.

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ASLIB CALENDAR

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference at Nottingham University.

OCTOBER

WEDNESDAY 8th. Scottish Branch visit.

NOVEMBER

THURSDAY 27th–FRIDAY 28th. Northern Branch Conference at Sheffield.

Northern Branch

Twenty-five people attended a meeting of the Branch on 15th April in the Manchester Central Library, when some aspects of library co-operation were discussed. Mr. A. Longworth, City Librarian, Salford, outlined the subject specialization scheme now operated by libraries in the northwest. Mr. D. J. Grogan of Manchester Public Technical Library gave an account of the service given to industry by that library. He stated that small firms, without their own libraries, were making increasing use of the public service. Mr. J. C. Hartas, of the United Kingdom Atomic Energy Authority, Industrial Group, gave an account of the second edition of the list of periodicals which he has just finished editing, after two-and-a-half years work, for the North Western Branch of the Library Association. The list is set in bijou type and reproduced by offset lithography with spiral binding. It may be ordered from the Borough Librarian, Warrington Municipal Library, Museum Street, Warrington, Lancs.; price 12*s.* 6*d.*

Miss Florence Milnes

A well-known personality in the world of librarianship is to retire towards the end of July after thirty-three-and-a-half years service with the BBC. Miss Milnes joined the Corporation in 1925 to do programme research. Almost immediately she realized the necessity for an adequate reference library and foresaw the role which it would play in the future. In 1927 Miss Milnes was able to start the library at Savoy Hill with a stock of two volumes. The Central Library, Broadcasting House, the outcome of this modest beginning, now has three Branch Libraries—at Bush House, Caversham, and the Television Centre. Between them they hold a stock of some 70,000 volumes, and, in addition, there are 365,000 illustrations in the Television Branch Library. All departments in the BBC have reason to be grateful for the service which Miss Milnes has built up for them, as have her forty-six staff, many of whom she herself has trained.

Miss Milnes has been BBC representative to Aslib for many years. Members will wish to extend to her their best wishes for health and happiness in her retirement and, as she hopes to keep in touch with the library world, will also look forward to meeting her again from time to time.

Mr. R. L. Collison

Members will wish to congratulate Mr. R. L. Collison on his appointment to the post of Librarian to the British Broadcasting Corporation in succession to Miss Florence Milnes. Mr. Collison has been closely concerned with Aslib activities for nearly ten years. He was a member of Council from 1949–56 and Deputy Chairman 1953–55. He has also been Chairman of the Library and Information Committee and the Book-List Editorial Advisory Board, and has served on the Executive and Finance and the Publications and Editorial Committees. He is now a member of the Conferences and Meetings Committee.

After training at the Hendon Central, Exeter City, and Essex County libraries from 1930–36, Mr. Collison was appointed Deputy Borough Librarian at Colchester until he moved to a similar post in Ealing in 1939. From 1940–46 he served in H.M. Forces in Britain, East Africa, and South East Asia Command, and attained the rank of major. For a short time after returning to civil life Mr. Collison joined the American Library in London as Reference Librarian, but in 1947 accepted the appointment of Reference Librarian to the City of Westminster, which he has held until the present time.

Among Mr. Collison's published works is *The Treatment of Special Material in Libraries,* one of Aslib's best-sellers.

Proposed Russian Language Courses

Holborn College of Law, Languages and Commerce proposes to run two courses in Russian translation for scientific workers, commencing in September 1958. The first course would be for beginners without any knowledge of Russian, and the second for those who already have a working knowledge of the language. Each course would involve attendance at the College two evenings a week. The elementary course would be of not less than two years' duration, and the advanced course about one year. The fee for each course would be 32*s.* All those who would be interested in enrolling for either of the proposed courses should write direct to the Principal, Holborn College of Law, Languages and Commerce, Princeton Street, London, W.C.1.

Patent Office Printing Arrears

The arrear of abridgments is now almost cleared. Copy is being sent to printer as soon as each sixteen-page signature is accumulated. Of the index volumes for the 740 series more than half are in proof and the corresponding consolidated name index is in the hands of the printer.

New Editions of the U.D.C.

The British Standards Institution has just published two new editions of the Universal Decimal Classification. The full tables for Class 69, Building, appear in English in B.S.1000(69), price 15*s.* This class was previously covered only by the abridged English edition and *Abridged Building Classification.* The other new edition is a trilingual abridgment of the U.D.C. in English, French, and

German, which has been prepared in collaboration with Deutscher Normenausschuss, Association Belge de Documentation, and Union Française des Organismes de Documentation. The tables are substantially the same as those of the English abridgment but are arranged in parallel with the three languages appearing side by side on the same page. There are separate indexes for each language. This publication is B.S.1000B:1958, price 6 guineas. Both books are obtainable from the British Standards Institution, 2 Park Street, London, W.1.

New English Translation

A new cover-to-cover English translation has been announced. As from January 1958 all the papers published in *Metallovedenie i Obrabotka Metallov* will be translated. Each paper will be priced separately. Tables of contents are available free of charge from Henry Brutcher, P.O. Box 157, Altadena, California, to whom all inquiries should be addressed.

New Key to Russian Translations

Consultants Bureau has announced a new monthly publication entitled *Express Contents*. It gives translated contents lists of all Russian journals of which cover-to-cover translations are being produced in the United States. Entries will be included in *Express Contents* two months after the appearance of the original Russian journals and will give, where possible, the expected dates of publication of the translations. The first issue, dated May 1958, contains contents lists of journals which appeared in January and February. The annual subscription is $25, but discount will be allowed on bulk orders. Further information can be obtained from Consultants Bureau, Inc., 227 West 17th Street, New York 11, N.Y.

Target

Target: the monthly bulletin on productivity, published by the Central Office of Information on behalf of the Board of Trade and the Ministry of Labour is now in its 11th volume. It contains articles on workshop layout, training techniques, work handling, transport and distribution, as well as staff management and office organization, and shows how problems in these fields have been tackled in a number of industries, organizations, and services. *Target* is available free of charge from the Publications Division, Central Office of Information, Montagu Mansions (Block 5), Crawford Street, Baker Street, London, W.1.

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MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared. American and English only. Work called for and delivered within reasonable distance. B. M. Collins, 77 Walm Lane, Willesden Green, London, N.W.2.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

ASLIB INFORMATION DEPARTMENT. Energetic and enthusiastic Deputy required with experience of information work and probably some knowledge of languages. German especially useful. Post offers unusual interest and excellent prospects to the right person. Apply in writing to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

JOHN INNES HORTICULTURAL INSTITUTION require a Librarian for a small but specialized library. Applicants should have a scientific background, preferably with a pass degree or equivalent, and should be proficient in German. Salary in the scale £370–£990 according to age and qualifications. Superannuation. Applications, with the names of two referees, should be sent to the Secretary, Bayfordbury, Hertford, Herts, not later than three weeks after the appearance of this announcement.

SENIOR LIBRARY ASSISTANT, graduate preferred, for technical library in the outskirts of Birmingham. Duties include perusal of technical journals, circulation of technical information, answering inquiries and ordinary library work. Knowledge of technical German essential and French useful. Five-day week and good working conditions. Good prospects. Salary according to qualifications and experience; pension scheme. Apply in writing, Director of Research, The B.S.A. Group Research Centre, Mackadown Lane, Kitts Green, Birmingham 13.

THE BOARD OF THE RUBBER RESEARCH INSTITUTE OF MALAYA invites applications for the post of Officer-in-Charge of the Institute's Publications Section. The main duties of this post will be supervising the publication of R.R.I. Planters' Bulletin, Journal of the Rubber Research Institute, annual reports, and other publications. The officer will also be required to administer the Institute's library and library staff and will be in close liaison with the Institute's Advisory Services.

Applicants should possess an honours degree in science or arts or equivalent qualifications; experience in publishing scientific work and in producing technical literature for the layman is essential. Language qualifications other than English would be valuable though not essential.

Remuneration, according to qualifications and experience, will be on the scale (Malayan dollars): basic salary $1,000 × 50—$1,900 per month, allowances $450 per month; superscale (by selection only) basic $2,050–$2,200–$2,350 p.m., allowances $450 per month. Additional allowance of $100 per month per child, up to a maximum of three children, is paid to an officer normally domiciled outside Malaya in a temperate climate country. Outfit allowance, on first appointment, £35.

Applications should be sent to the Secretary, London Advisory Committee for Rubber Research (Ceylon and Malaya) Commonwealth Institute, London, S.W.7, from where additional information may be obtained.

W. CANNING & Co. Ltd., Birmingham, require an experienced librarian to take charge of technical library. Applicants should have a good technical background and knowledge of at least one foreign language. The Company offers social and canteen facilities. Write giving full details of experience, age and salary required to W. Canning & Co. Ltd., Great Hampton Street, Birmingham 18.

Wanted

Any back numbers of *Medico Legal Journal* and *Journal of Forensic Medicine*. The Librarian, H.M. Prison Service, Pathological Department, Wormwood Scrubbs Prison, London, W.12.

Paper Industry, May 1956. Offers to The Librarian, Fisons Limited, Harvest House, Felixstowe, Suffolk.

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Volume 10 **July 1958** **Number 7**

THE NATURE AND FUNCTION OF SCIENCE

BY RITCHIE CALDER, C.B.E.

Aslib, *10th February* 1958

SCIENCE, which exists to rebut magic and disprove superstition, is in danger of creating its own magic and encouraging a new superstition. This is due to the 'jargon' of science, an abracadabra, which produces results that mystify, and to the release of stupendous forces, to which ignorance gives the quality of The Unknown. It is no exaggeration to say that just as our primitive ancestors stood in superstitious awe and fear of the elemental forces—the sun, the lightning, the storm, the earthquake—and ascribed them to the Supernatural, so today, for the greater part of mankind, man-made elemental forces, manifested in explosions and radiations, have that same quality of awe and fear. They ascribe them, not to the Supernatural but, to the Superman, the scientist.

This is an extremely dangerous circumstance because it means that ordinary people, uninstructed in science, abdicate from judgments about science. This sense of 'leaving it to the brainy blokes' (and keeping one's fingers crossed) is not confined to what we call the man in the street. It is dangerously true of those who dispose of, or deploy, the results of science—the statesmen, the politicians, the civil servants and the boards of directors. For instance, out of 362 Members of Parliament who have had a university education less than forty have a scientific degree or an equivalent, such as a medical degree. This comment does not imply that our legislators should have a B.Sc., or even a university education, before they enter Parliament but it does reflect the disproportionate lack of scientific knowledge.

As H. G. Wells used to say, 'The race is between education and catastrophe'. Unfortunately today, as reflected in our schools and our universities, education itself can be a handicap in that race. What is happening is that we are producing two different, and indeed antagonistic types of education. The gulf between humanities and science is widening. By the nature of our educational system, a choice has to be made between the two. Any child taking up science (and at a scientifically immature age) has to make up his or her mind to concentrate on scientific subjects to the exclusion of almost everything else. The intensive specialization in the university science courses makes it even worse. On the other hand the student who does not want to adopt science as a career (and science education now is vocational training for a career) renounces science because, by reference, if it means all that effort on the 'Science Side', it must be very difficult and inaccessible to the 'outsider'. Science by this token is becoming a cabbala and a priesthood.

This is tragic and unnecessary. Learning *about* science, so that intelligent people can form judgments *about* science, is not difficult and it is certainly not impossible. It is true that the jargon of modern science is almost unintelligible. In the nineteenth century any educated man could understand what that other educated man—the man of science—was talking about. Scientific terminology based on classical derivatives was descriptive. Today scientific terminology is cryptic. The terms are code-words, each conveying to the specialist, but to nobody else, a whole filing cabinet full of knowledge to which others have no access. One cannot blame the scientist for the words (unless one is a purist and resents the bastardizing of language) because in the vast complexities of the accumulation of scientific facts there must be short-cut words. Those of us who do shorthand know the virtues of grammalogues, the symbols which convey a whole phrase. What one can blame the scientist for is that he fails to recognize that such words form his 'language of convenience'—just like a typist's shorthand—but that he—like the typist—has to translate his words and symbols into intelligible language. Most scientists regrettably have neither the condescension nor the capacity to do this translation. That again is the fault of their education. It is this breakdown of communications not only between the scientist and the community but between the scientists of the various branches of science which is paralyzing our thinking.

It is terribly dangerous. For example, consider the U.N. Conference on the Peaceful Uses of Atomic Energy, at Geneva in 1955, of which I was a member of the secretariat. This was an exhilarating and hope-inspiring occasion. The barriers of secrecy, which had divided the scientists of the nations from each other and had corrupted the commonwealth of science, collapsed overnight. The scientists in the exuberance of their liberation disclosed and discussed the facts. But in the stock-taking, we found alarming signs. The physicists, with unlimited resources, because they were the bomb-makers, had raced ahead. The chemists, with all the hazards of radioactivity, were behind. And the biologists, concerned with effects on living things, were laps behind. It was not just the question of the security bulkheads which had separated the disciplines but of the vast cryptic language which physicists had built up and which had no common reference to the language of the others.

Every year some 2,800,000 original scientific reports are published in some 40,000 scientific journals throughout the world. No human being, and no system so far evolved, can compass this Niagara of discovery. It defeats systems of abstracting because the abstracts in any given subject are multitudinous enough but abstracts which can give cross-information between the branches of science will be even more intimidating. This is not just a question of difficulties of conventional languages—although an eminent American scientist, after Sputnik, said, 'Either we will have to learn physics or we will have to learn Russian'—but again of the diversity of jargon, and concepts. Yet the desperate need of our times, in science itself, is for the cross-reference between the disciplines, the breakdown of super-specialization. Indeed, I believe that the only branches of science which matter are the hyphenates—because they are the cross-overs. By 'hyphenates' I mean physical-chemistry, bio-physics, etc., although I want to see a broadening of the -'ologies' which are the studies of subjects and not of limited aspects. And I would like to see the greatest emphasis on ecology, since that should embrace everything and all of us, in the environment of the man-made and the natural world. (I may say my own -ology is 'babelology' since my professional concern is to try to understand the jargon of all the sciences.)

This problem is not a new one. It goes back to the invention of the word 'scientist' in the 1840s, which established the fact that experimental science had in fact become something distinct from natural philosophy, and since then 'science' has become essentially an aggregation, and not a systematization, of scientific discovery. It is true that in cosmology, and in mathematical physics, there have been impressive attempts to simulate a unity—Einstein's Theory of Relativity is only one example, but I personally know of no philosophy which has succeeded in reconciling the nature of matter with the nature of living (although octogenarian Viscount Samuel, in *In search of reality*, and octogenarian Earl Russell, in *Impact of science on society*, have tried).

Nor is the problem of eruptive literature a new one. Scientific papers beget scientific papers and the rate of literary-procreation is assuming the proportions of a Malthusian problem. In 1946, the Royal Society set up a committee, of which I was a member, to consider 'scientific information'. Almost immediately the committee split into two. There was this vast problem of what one might call 'scientific intelligence'—the 'gen' of science itself—and the need for ensuring that this information was disseminated within science. The second group concerned itself with what one might call the extrovert functions of science. This was the dissemination of scientific knowledge to the non-scientific. The recommendations of the second group included the setting up of an 'Institute of Scientific Information'. That recommendation was never made effective, nor am I aware that any of the sensible suggestions of either group was seriously implemented. That was twelve years ago and the situation has got progressively worse.

I said earlier on that it was not really difficult nor impossible to teach *about* science—that is about the nature of science; the scientific method; the history of science which shows that scientific discoveries are the result of a logical, comprehensible process and show that the scientist is life-sized and not genius or a kind of demi-god; about the social functions and the social implications of science.

There is nothing mysterious or sacrosanct about scientific method. Lots of people may not believe this, because we have begun to regard it as something which is vested in a group of people who are a sort of Elect, but scientific method is not like Revelation—something arrived at by prayer and by fasting. Even some scientists are confused about this and regard methodology as something which ordinary people cannot grasp. I remember one Polish scientist describing it as 'the science of science'. I suppose if you want to create a magic of science or secret society and have the Temple of Science you can go on indefinitely—the science of the science of the science of science. No, there is nothing mysterious.

I explain it often in terms of a detective—not the detective of fictional and erudite mysteries where the author arrives at an *inductive* conclusion. This is *deductive* detective work, which I am talking about. It is not Lord Peter Wimsey; it is Sergeant Beef—just the ordinary flat-foot. A murder has been committed; he sets about it in a plodding, systematic, thorough way. He visits the scene of the crime. He observes the evidence which he carefully collects, gets an idea as to how the murder was committed and he suspects the sort of person who may have done it. It is just a hunch, based on some self-evident facts. He goes ahead with his investigation. He tests all his facts. He carries out experiments to test his facts. Then when he has assembled it all he examines them again in the light of his hunch. Maybe the facts do not square with his original idea so he has got to scrap it and start all over again. If the facts do conform he then has a theory—a theory about how the crime was committed and a theory about who may have committed it. He then starts again getting the facts which will satisfy the Director of Prosecutions and eventually a jury. That is, in fact, scientific method. The scientist on the basis of observed facts forms a *hypothesis*—the equivalent of the inspired, or experienced hunch of the detective. He then carries out experiments to check his hypothesis. If the results stand up, he has a *theory*. But he has to make more and more experiments to substantiate that theory and convince his scientific peers that his results 'hold water'. The essence of any scientific result is that it must be repeatable. If the results are consistent it may even acquire the status of a *law*.

Let us be quite clear. No scientific *law* is as unchangeable as those of the Medes and the Persians. All of them are subject to re-examination and if necessary to amendment. It is not easy to amend a scientific law; it is about as difficult as amending the Constitution of the United States, but it is, and can be, done. Einstein modified Newton, and there are many other examples in which what seemed to be the ultimate authority has been revised in the light of subsequent discoveries.

Let us see how it would work out in scientific terms. Let us take a biological example. You are a very observant person. You go around the house, farmyard, and the woods and the countryside, and you observe creatures. You are impressed by the fact that a hen, which lays eggs, does not suckle its chicks. On the other hand the cow, which suckles its calf, does not lay eggs. And being a shrewd person you say to yourself 'It seems to me that those creatures which suckle their young don't lay eggs.' At this stage it would justify no more than a letter to *The Times*. So you go on and you make more and more observations and you discover that amongst the sea creatures while fish lay eggs the whale does not. But the whale suckles its young. Thoroughly, all over the world, you check with all the creatures and wherever you go, in Asia, in Europe, in Africa, in North America, or in South America your observation stands—creatures that suckle their young do not lay eggs.

Now it is no longer just a hunch; it is a *theory*. But once again you have to test that theory and you continue your investigations and again your facts hold. Now it might almost be regarded as a *law*—'Animals that suckle their young do not lay eggs'. But then you go to Australia and you find the duck-billed platypus. This creature not only lays eggs, it suckles the young which are hatched from them. So your *law* has a flaw. But there is no need to commit suicide because, in scientific terms, it is possible to add a rider to that law—'with the exception of the duck-billed platypus'. That is what is meant by 'the exception which proves the rule'. You see it is a logical process: observe the facts; form a *hypothesis* on these facts; test your *hypothesis* until it has the substance of a *theory*. Then test your theory until it will convince your scientific colleagues who can check it by reproducing and remember that a scientific law is not immutable.

Even the doctrine of Cause and Effect which was the granite foundation of nineteenth-century science is no longer inescapable in the twentieth century. Although it may not be apparent from the attitudes of some scientists, humility has replaced arrogance in scientific concept. And this is the result of the greatest discovery which science has ever made—the nature of the nucleus. It is in the atom that we find *uncertainty* in a philosophically insoluble form. It is impossible to predict how a particle will behave. And it never will be possible; it is not a question of improving methods or instruments; it is unknowable. No one, of course, has ever seen an individual atom or an electron. They have seen their effects in a cloud chamber or in the emulsion of a photographic plate—ionized trains, vapour-trails like those left by a jet aircraft in the sky. But the whole of the earth-shaking results of nuclear physics has followed from models which mean mental, or mathematical, conceptions of the atom and its particles. These models derived originally from Cause and Effect. And these models have served very well even to the splitting of the atom and the development, if you like, of Zeta and nuclear fusion. But those models depended on the *average* behaviour of *large* numbers of particles, not on any one—it was like taking a sample survey in a population. That, of course, is not sufficient for the scientist. They want to know precisely what the position and velocity of any electron is, only so can they predict what its path is likely to be, like predicting the position of a star with the help of the almanac. But they never can predict the position of an individual electron or particle.

Heisenberg, the German, who propounded *Theory of Indeterminacy*, reasoned like this: if we want to know where an electron is we must illuminate with some kind of light (not necessarily ordinary light, but say X-rays) and use a microscope (not any which we yet possess, but one ideal for the purpose) and observe it, not with the unreliable human eye, but with a photographic plate or some other detector. Notice that this means using light, but light with the wavelengths of visibility would not serve. It would require X-rays or even shorter rays from radium. Then you might have the accuracy of *position*. But that is not enough; we cannot predict where Mars will be next Thursday unless we know the speed and direction in which it is travelling. But—and this is how Heisenberg reasoned—if you use X-rays, or other intensive rays, they are so energetic that they will kick the electron forward or sideways so you have changed its *speed* or its position at any moment and possibly its direction until you cannot be sure where it is going. What it all boils down to is this: In the case of one electron you can observe its *speed* at any moment, but you cannot know both *speed* and *position* simultaneously, which is what matters if you want to predict its future behaviour. You see, the mere act of observation changes the behaviour of the electron.

So *Chance* is back. This does not discourage the scientist. Probability is a perfectly valid scientific principle. And there are those, even amongst the exact scientists, who are relieved by it. Humility will do science no harm. '*Certainty*' with its sense of scientific predestination was one of the things which helped to make ordinary people uneasy, if not afraid, of science.

My own view is that we should not, for discussion purposes, ever talk about scientific *method*. We should rather discuss scientific *attitude*—the discipline and the processes of logical thinking which determines the integrity of thought and of conclusions. I say this because, although the scientific *attitude* must not change, scientific *method* can mean different things to the different disciplines. For example, the exact sciences—physics and chemistry—demand precision to the umpteenth decimal place; they demand that everything should be reduced to invariables. In biology, however, where living things do not conform to the exactness of matter, the scientist learns to cope with variables and to accept them as a perfectly normal factor in his science. In the social sciences, where they have borrowed the attitude and indeed a great deal of the language of the exact science, of course the variables are even greater.

So from the point of view of the ordinary person scientific attitude or method can be simply expressed as an integrity within a logical framework of observation, testing of observation and proving of ideas when you have formed them. This could be applied, with advantage, to our human affairs—including our politics. Having spent five years in the Foreign Office—a cuckoo in that particular nest—I can assure you that a great many of our troubles in the world today, in diplomatic terms, could respond to scientific method. It is the lack of method and the lack of logical attitude which in fact is at the source of a great deal of our international troubles.

It is true that in any international situation there are a great many variables; leaders do not behave like moving particles, and statesmen are very erratic stars in their unpredictable courses. But I think on examination of the facts of any situation you could reduce these variables to a limited number of what we called in war-time political planning 'contingencies'. I used to say that any political situation, even when it is explosively and dramatically out of your hands as in the conditions of war—a confusion of military and political consequences—could be reduced to six contingencies and you could, and we did, plan for each of these six contingencies so that we would not be taken by surprise by any outcome.

So I suggest the scientific method, or attitude, can with value be applied to human affairs as well as to nature.

In any event human affairs are very largely today dictated by science. No matter what situation it is which sends statesmen scurrying around the world from conference to conference, behind it all is the developments of science—Sputnik, the Hydrogen Bomb, Zeta, or what have you. But the people who are dealing with these situations by and large know nothing about science—you may recall that President Eisenhower referred to the scientists as 'just another lobby', and I heard a British statesman speaking at a scientific dinner and boasting, as so many people do, 'Of course, I know nothing at all about science' and the following morning he dashed off to Washington to deal with the atom bomb.

The same is true by and large in industry, our whole economy now depends on the speed at which we absorb and develop and the use we make of scientific discoveries. Recently I asked the chairman of a firm—a very big firm which originated from science and depends upon it for its success—how many scientists he had on his Board. He replied 'Two—and that is two too many.' I remonstrated. But he pointed out that scientists—with certain conspicuous exceptions—were not good business men. They were very good at research and at building up big research teams—not always, according to him, because they needed them. But in their research they were always aware of the advancing front of science. While the production engineer would be screaming for a directive to go ahead with the mass-production of some item, the scientist would be holding back because he knew that there was a possible improvement. As this chairman of the Board said, 'While we are trying to get ahead with Mark Two the research director is already thinking about Mark Four'. Now what would worry his colleagues would be that they would not know whether their competitors were in fact going ahead with Mark Three.

I can sympathize. I know the type of scientist very well indeed—and I sympathize with them too. But you see what is needed on a Board of Directors like that is a group of men who know enough *about* science to make judgments on science, or on scientists. If they know nothing, then they are in a hopeless position and a great many of our troubles in industry today are due to this fact that the Board of Directors is scientifically ill-informed. This sounds ridiculous because, as this chairman said with a sneer, 'We can always hire scientific advice'. But my point is they are not in a position to judge the advice which they are offered. They are either the hostages or the gaolers of their scientists.

And this is true, of course, in government as well. You will realize that by far and away the greatest expenditure, and support, for research comes from government sources. Apart from the Ministry of Supply, with its vast expenditures on research and development for the services, there is the Department for Scientific and Industrial Research, the Medical Research Council, the Agricultural Research Council, and public bodies such as the National Coal Board and the Atomic Energy Authority. Government bodies are, therefore, far and away the greatest employers of scientists and the greatest users of science. In the ultimate their work is determined by our elected legislators but for administrative, and indeed today executive, purposes this great deployment of science, and employment of scientists, is in the hands of Civil Servants. The Civil Servant who has had a scientific education is extremely rare. He is so rare in fact that in Whitehall he would be regarded as eccentric. The top Civil Service derives very considerably from Oxford Modern Greats. I am not casting any reflections on the nature of the Oxford training but I have still to find that it gives our Lords and Masters a training which will equip them to handle scientific problems.

I know that it is claimed that this type of broad humanities education produces a juridical mind and that the function of a Civil Servant is to be objective and judicial. But there are whole areas of evidence in which only a scientific assessor can judge. For example, explaining nuclear problems to a Civil Servant is like trying to describe an elephant to a blind man. It is possible, but only if the blind man is less impatient than the average Civil Servant.

Another aspect of government relationship to science is the very delicate one of how far one can indeed interfere with, or apply sanctions to, scientific thought. In its worst aspects, of course, this applies to secrecy and to security, but also it applies to the ultimate sanction which is the withholding of money from the public purse. In this country I think by and large—leaving out the security aspects—we have succeeded in preserving the integrity of pure research. For example, our system of University Grants, which means that public money goes to academic institutions for pursuit of knowledge under their direction and not under the direction of the Treasury, has succeeded in maintaining academic independence; the scientist does get his head. That is the area of *pure*, or *academic* research. There is the other form of science which I call *fundamental applied*. This means research which is indeed the pursuit of knowledge but in a definite sphere—the study of the behaviour of gases which would provide the information for Zeta or for a jet engine. Then there is *applied science*, which is 'programmed'. This is research towards definite objectives. The scientist has to find the answers—usually predetermined ones. Then there is, of course, *technology* which is the turning of that applied science into factory processes. A great deal of fundamental applied research is done by the government departments. Here again I think there has been preservation of scientific integrity—that the scientists are encouraged to pursue their own lines of inquiry and to behave like academic scientists.

Applied science, whether in government service or in industry, is legitimately directed to certain well-defined ends.

There is a definite limit to any interference with scientists. This was proved in Hitler's Germany where attempts at political direction and nomination meant that German science was corrupted to a degree which in fact led to the eventual defeat of the Germans. This is what makes the recent developments in Russia—Sputnik and the H-bomb, etc.—so interesting. If we were to judge by the Lysenko incident, where for political reasons a body of what was in fact invalid doctrine was imposed on the whole field of Russian genetics—for a brief time—we might have assumed that in fact science was directed, in the U.S.S.R., for political motives. We might also have assumed in fairness that, in a country where the needs of survival were so great, emphasis would be laid on applied science, producing immediate results, to the neglect of pure science. What events have shown—particularly Sputnik—is that in Russia there has been a great deal of freedom of pure science. We might have realized that from the position of the scientist in Russia. Top scientists rank with ballerinas as the aristocracy of the Soviet Union.

You know that the surprising thing, part of the psychological shock to the Americans, was not the technology of Sputnik—not how they managed to produce the propellants or to build the rocket—but the fact that they got the red moons into those particular orbits. My 13-year-old son—a Space Age child—put his finger on it. He asked me about Sputnik and I explained to him how technically that rocket had been fired. He said, 'I am not interested in how they made the rocket. I want to know how they got it in that orbit'. This is the point. It proved that Russian science—in what we would call the *pure* sense—is extremely highly advanced. This ought not to have surprised us because historically, in pre-revolutionary days, the Russians were the world's best ballistics experts, in terms of artillery, and, of course, they play chess and they are good astronomers. If you can play chess you can be a pretty shrewd astrophysicist. But what is more important is that after forty years of the Soviet régime in which science has been a natural and accepted part of *all* education for everyone, you have a climate of science in Russia. Our scientific climate is extremely erratic.

These comments on British education and scientific structure may seem misleading at a moment of a spectacular British success in the form of Zeta. We have also proved that we have never been far behind in any of the great advances. (We had no part of Sputnik because we were not entering that field for purely economic reasons.) But to this extent we are living on our scientific capital. We have extremely brilliant scientists. We are short, as we are always being reminded, of technologists, of the people who convert science into industrial processes. Here again circumstances make this sound unreal because our civil engineers, when they took over from the nuclear physicists, made the atomic power stations more efficient than the scientists could ever have dared to expect. We have been drawing pretty heavily on that capital. Sir John Cockcroft was pointing out at a conference I was at recently in Amsterdam that Britain and Europe were losing scientists to America at a disquieting rate. He estimated that over 40 per cent of the scientists who went on Fellowships or short-term assignments to the United States did not return. This is a serious matter because we are not merely losing the advantages of their brains—in terms of the commonwealth of science, it does not really matter where a scientist does his work—but we are losing the leadership of these vigorous minds and the inspiration which they can give to others.

You may be familiar with the comparative figures of the production of scientists. Here they are expressed in totals and in relation to the number per million of population.

	Pure Sciences	*Applied Sciences*
U.S.S.R.	12,000 (56)	60,000 (280)
U.S.A.	23,000 (144)	22,500 (137)
Britain	5,200 (105)	2,800 (57)
France	1,760 (41)	2,988 (70)
West Germany	3,450 (67)	4,450 (86)
Switzerland	215 (44)	399 (82)
Italy	2,436 (51)	2,200 (45)

By 1960, the expected figures for applied scientists in the United States are 38,000; for Britain, 4,200, and for the U.S.S.R. over 90,000.

Our proposed answer to this is that we should increase the number of technological colleges and technical schools and enlarge the entry into the science faculties in the universities. To me this is just building Nissen huts on to an ivy-covered 'stately home' of our education system and ignoring the death-watch beetles in the rafters. What I mean by that is that if you simply add on to your educational system more and more specialized institutions with more and more career-training science courses you are going to warp the structure of education. You are going to increase that dichotomy to which I referred at the beginning—this widening gulf between science and the humanities, between those who are creating the social dynamic of our times and those who are supposed to guide the social progress of our times. This cannot be the answer. It can only be an emergency measure which we should treat with a good deal of reserve and caution. It is an emergency measure because unless we do produce more and more scientists and technologists the economy, and the survival, of this country will suffer disastrously. On the other hand we must drastically revise our ideas about education. To me it is obvious that teaching *about* science should be in all education. The teaching of science in the specialized sense can be left until later. I personally would like to see it left to the universities with the training in the schools being devoted to the common humanities and to teaching *about* science which would fire the imagination of those who wanted to go into science—I do not think we would lose in the total; I think we would increase the number of our scientists—but which would give everyone as citizens a grasp of these forces which somehow or other we must ultimately control.

I do not want to sound like a Sybil, or a Cassandra, but anyone who is aware of the state of science and the failure of the communications between science and the public and, as I pointed out, between the scientists themselves, must be extremely uneasy about the situation today. I am not talking now only of the position of this country. We have moved into a completely new age. Our pre-second world war thinking has practically no relevance today. Our concepts of economics and of politics have been completely changed—although the economists and the politicians may not realize it—by the new forces which have been unleashed and the new possibilities and dangers which are manifest. We are fighting, as I said at the outset, a new superstition.

To those of you who are concerned with the most certain form of communication—through the written word—I ask you to consider the points which I am making now; how are we to keep the scientists informed, not only of what is happening in their own narrow specialties, but in the other branches of science around them? How, above all, are they going to extend scientific communication to the wider world—to the people who must form the judgments about the use and abuse of science? The point I have made there is the necessity for instruction *about* science.

You are entitled to reply that one of the obvious means of teaching about science is through the instruments of mass-communication—the press, the radio, the television and the film—and that it is incumbent upon those of us, like myself, who are the instruments of these instruments to encourage this greater understanding. I accept the impeachment and the responsibility but I would point out that this wider communication is possible only when those who direct these instruments recognize that their function is to illumine public ignorance and not to condone it. If they believe that the public want to be entertained rather than educated, then they will say, as they do, 'We give the public what it wants'. And there we have come full circle. We are back at the problem of education—education of the formers of public opinion and education of the public whose opinion has to be formed.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

ASLIB CALENDAR

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference at Nottingham University.

TUESDAY 16th. Cranfield Research Project, Open Day.

OCTOBER

WEDNESDAY 8th. Scottish Branch visit to Messrs. Dunn & Wilson, Falkirk.

NOVEMBER

THURSDAY 27th–FRIDAY 28th. Northern Branch Conference at Sheffield.

Annual General Meeting

The Annual General Meeting was held on 3rd June at the Connaught Rooms, London. It was preceded by an enjoyable luncheon at which the guest speaker, Sir Owen Wansbrough-Jones, K.B.E., C.B., M.A., PH.D., Chief Scientist to the Ministry of Supply, spoke on 'Some trends in the announcement of new knowledge'.

Successful candidates in the Council election were: Messrs. E. A. Baker, A. R. Cameron, E. J. Carter, S. P. L. Filon, K. W. Humphreys, Miss Barbara Kyle, Mr. D. T. Richnell, Miss I. M. Slade, Mr. F. H. Smith, and Mr. K. D. C. Vernon.

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Aeronautical Group

The seventh annual conference of the Group was held at the College of Aeronautics, Cranfield, from Friday 11th to Monday 14th April. More than forty members attended. Saturday was devoted to the study of aeronautical material and its use. Mr. J. Sharp spoke on 'Alphabetical indexing in the field of aeronautics', Mr. C. W. J. Wilson on 'Report literature used by aerodynamicists', and Mr. A. H. Holloway on 'Russian scientific literature'. The chief speakers at a symposium on micro-reproduction held on Sunday were Mr. H. R. Verry and Mr. J. Burkett and on Monday some of the members saw Mr. Verry's exhibition of equipment at the Treasury. An exhibition of micro-equipment was held concurrently with the conference and representatives of suppliers of equipment and services were available to answer inquiries.

The Annual General Meeting of the Group was also held during the conference and officers and committee were elected as follows: Chairman, Mr. F. H. Smith; Honorary Secretary, Mr. T. Aitchison; Honorary Treasurer, Mr. F. C. Cayless; Members, Mr. E. Alan Baker, Mrs. K. Bourton, Messrs. A. Bray, A. R. Cameron, and C. W. Cleverdon, Miss M. Dyke, Messrs. A. H. Holloway, J. Rosser, J. Sharp, B. F. R. Spencer, and R. C. Wright.

Professor A. J. Murphy, Principal of the College of Aeronautics, was guest of honour at the annual reception and dinner on Saturday. After dinner Mr. Robert Fairthorne entertained the company with a demonstration of paper folding.

The papers given by Mr. Verry, Mr. Burkett, and Mr. Wilson will be published in the August issue of *Aslib Proceedings*.

Aslib Cranfield Research Project, Open Day

A meeting has been arranged for 16th September 1958 for those interested in the work now being done at Cranfield on the comparative efficiency of information retrieval systems. In the morning there will be short talks by the Project Director, Mr. C. W. Cleverdon, and by the three members of the staff, Mr. J. Hadlow, Mr. T. Opatowski and Mr. J. Sharp, and these will be followed by general discussion. In the afternoon there will be a meeting of the Classification Research Group to discuss the facet schedules which were prepared for the project by Mr. B. Vickery and Mr. J. Farradane. This meeting will be open to anyone attending for the day, but for those who do not wish to attend this meeting there will be a further opportunity in the afternoon to inspect the indexes or discuss the project with members of the staff.

The attendance will be limited to forty. Transport will be arranged to meet the train which leaves St. Pancras at 9.20 a.m. and arrives at Bedford at 10.32 a.m., and to catch the train leaving Bedford at 4.50 p.m. (arriving London 5.45 p.m.). The charge for the conference including morning coffee, lunch and afternoon tea will be 7*s.* 6*d.* There will be a further charge of 5*s.* for those wishing to use the transport to and from Bedford. Applications should be sent before 8th August to Mr. C. W. Cleverdon, Librarian, College of Aeronautics, Cranfield, Bletchley, Bucks.

Unesco Symposium

A symposium on national libraries in Europe will be held from 8th to 27th September in the Austrian National Library, Vienna. It will be organized by Unesco for the purpose of bringing together directors of European national libraries and their delegates to discuss the part played by libraries in intellectual exchanges between peoples, to draw up a general plan and formulate recommendations for action to promote international activities. The symposium will be limited to thirty-five participants and twenty-six member states, including the United Kingdom, have been invited to send representatives.

The main work of the symposium will be carried out in plenary sessions and in meetings of three working groups which will study respectively: the organization of national libraries, and general questions; the bibliographical activities of national libraries; and national libraries and inter-library co-operation. Mr. F. C. Francis, President of Aslib, will lead the first group.

Institute of Information Scientists

At a general meeting held on 23rd May the main clauses for a Constitution for the Institute were approved and officers and council were elected. The aims of the Institute are to act as a professional qualifying body for those engaged in scientific, technical, and economic information work, and to promote and maintain high standards in such work. Further details can be obtained from the Honorary Secretary, Mr. J. Farradane, Torran, Crofton Road, Orpington, Kent.

Course in Scientific Russian

Ealing Technical College have arranged an intensive course in scientific Russian to take place from 22nd September 1958 to 2nd July 1959. Classes will be held on Mondays and Thursdays from 2.30 to 4.30 p.m. The course is intended for specialists in research establishments and industry who recognize the growing need to examine scientific papers published in Russian. Translations are often available and full information about all sources will be given to members of the course, but ability to consult original papers is obviously desirable. The fee for the course is £3. Further particulars and nomination forms may be obtained from Ealing Technical College, St. Mary's Road, London, W.5.

Lectures on Technical Publishing

The Technical Publications Association is arranging a series of evening lectures on the technique of technical publishing, to take place in London in the autumn. The course is intended as an introduction to the production of technical publications for authors and illustrators. It is expected that there will be a few vacancies for non-members and application should be made to the London Area Group Secretary, Technical Publications Association, 46 Brook Street, London, W.1.

Fuel Abstracts

The Department of Scientific and Industrial Research has announced that the publication of *Fuel Abstracts* will cease at the end of 1958. This is due to the closing of the Fuel Research Station at Greenwich. The new research station at Stevenage will undertake research in other fields. The decision to cease publication of *Fuel Abstracts* will be regretted by all who have any occasion to use the literature of fuel as there is no other abstracting or indexing service which adequately covers the same field.

Mechanical Translation

A few copies of the report of the discussion at the meeting on Mechanical Translation, held under Aslib's auspices at the request of Ferranti Limited on 21st April 1958, are available from the Director, Aslib, 3 Belgrave Square, London, S.W.1.

New Film Catalogue

The Central Film Library of the Central Office of Information has issued a special supplement to its catalogue of 35 mm and 16 mm films. It comprises a number of popular series which have appeared on BBC television and a special section of 150 films from the U.S.A., previously distributed by the United States Embassy and including a number of cartoons made by Walt Disney on various aspects of health and disease. The supplement is available free of charge to all those who purchased the original catalogue.

Human Rights Day 1958

The tenth anniversary of the adoption of the Universal Declaration of Human Rights falls on 10th December 1958. Though much progress has already been made, the United Nations Commission on Human Rights has emphasized, in recent letters to member States, that a considerable amount of work has yet to be done before the standards of the Declaration can become a universal reality.

MEMBERS' ADVERTISEMENTS

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B.E.A. require an ASSISTANT LIBRARIAN for duties mainly concerned with the general reference section. Qualifications: A.L.A. or studying for the registration examination, and two or three years' experience including some special library work. Salary range £10 17*s.*–£13 0*s.* 6*d.* p.w. Applications to Senior Personnel Officer, Engineering, British European Airways, Engineering Base, London Airport, Hounslow, Middlesex.

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Chemical Abstracts, Vol. 30, no. 6, 1936. *Manufacturing Chemist*, Vol. 28, no. 3, March 1957. *World Crops*, Vol. 1, nos. 1 and 3, 1949; Vol. 2, nos. 3, 5 and 6, 1950. Offers to The Librarian, Fisons Pest Control, Ltd., Chesterford Park, near Saffron Walden, Essex.

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Volume 10 August 1958 Number 8

THE USE OF MICRORECORDS IN LIBRARIES AND INFORMATION SERVICES

BY J. BURKETT, F.L.A.

Aslib Aeronautical Group Conference, Cranfield, 13th April 1958

INTRODUCTION

AT the moment there appears to be a lively interest in the significance of microrecords; the Symposium at Hatfield a short time ago, and now the present meeting. I wonder, however, if librarians in general fully appreciate the pros and cons of the subject and intend to do something about the various problems common to many libraries today, problems that might well be answered by adopting one or other of the forms of microtext. Commercial establishments accepted microfilming some years ago, and, I understand, so have some bookmakers and football pool promoters. Or are we to give lip-service only, waiting for someone else to go ahead to establish this new form of reading material (that is, new to library practice) just as we have done for certain fundamental problems that are the main concern of librarians—acquisition, cataloguing, classification, binding and storage, interlibrary loans?

Each year we have to exercise considerable care to keep our budgets within realistic bounds, but have we available detailed cost analyses that enable the pinpointing of places where economies might be made by change in one way or another? Can we save on binding? What is the real cost of cataloguing and classification in relation to available labour? Is there any way to cut down the high cost of interlibrary loans (made up by postage, and administrative and handling time)? These are familiar problems. Two of the foremost problems, however, are the optimum dissemination of information; and storage space. The latter is a costly item and it is a factor often disregarded, probably because it is concealed among other costs—capital investments in building, interest, depreciation, insurance, lighting, heat, cleaning, carrying, etc. Yet it is important to know what it costs a library to store its resources, particularly at a time when research material grows rapidly. The situation is aggravated by the increasing scarcity and cost of building land.

The use of microrecords might be considered as a means of alleviating to some degree each of the problems stated above, particularly from the cost and space viewpoints. Microtext is not necessarily advocated as the panacea for every problem. A difficult hurdle has first to be overcome—the prejudice of research workers to the presentation of material in an entirely different form. The perfection of apparatus to avoid difficulty in reading, particularly for long periods, portability and cheapness are other factors that need consideration if microrecords are to become an important feature of the library acquisition programme of the future.

Nevertheless, in spite of the scepticism apparent on the part of many librarians, the microreproduction of reading material has come to stay. Make no mistake about that. The rate at which its usage is likely to increase in the future depends on an adequate appreciation of the various microforms, vigorous co-operation between manufacturers and users of apparatus and text, international standardization, reduction of too many types of viewers in favour of improved design and reduction of cost.

ACQUISITIONS

There is available, mainly in America and in Europe and to a lesser degree in this country, an extensive range of publications in one form or another of microtext. In many cases the material is unobtainable in any other form or, where available second-hand, the cost is beyond the resources of many librarians. For instance, *Annalen der Chemie* in 554 volumes on Microcards at £400 would have cost £1,800, whilst *Zeitschrift für Physikalische Chemie* in 193 volumes costing £283 on Microcard (£324 on microfilm) would cost £1,000.

All of the earlier reports of the Atomic Energy Commission which were reduced to microfilm before destruction to make storage space are only available on Microcards. This became necessary when, at a later date, the reports were declassified and made available to depository libraries in the United States and in foreign countries. Sheffield Public Library, for instance, has about 10,000 Microcards in its A.E.C. collection.

The World Meteorological Organization reports for the International Geophysical Year, 1957–58, will be available only on Microcard. An enormous output is expected from the four main observation groups. In Part I alone it is estimated that there will be the equivalent of 110,000 pages, 220 volumes each of 500 pages. The cost of printing, etc., would cost 4,400 dollars. These pages will be contained on about 2,750 Microcards at a cost of 890 dollars. The total number of cards for the complete output is estimated at 18,500.

More widespread attention is being directed to thesis literature, a valuable source of careful and detailed research. In the United States doctoral dissertations from more than seventy universities are microfilmed annually by University Microfilms. The number estimated for 1957 was five thousand. Abstracts written by the author are published monthly in *Dissertation Abstracts* and a yearly cumulative index to all dissertations published in the United States and Canada is published as the thirteenth issue. University Microfilms Ltd. in London can obtain either positive copies of each dissertation or half-size enlargements or Xerographic enlargements on paper. The Microcard Foundation are also attempting to enter this field. As far as this country is concerned, we have to be grateful to Aslib for tapping the resources of universities in Great Britain but the production of microfilmed copies of theses accepted for higher degrees has not yet been put on a publishing basis.

Microfilm copies of rare material possessed only by foreign libraries are a boon to research workers in special fields. All the necessary resources can be collected in one place, near at hand to the student without involving him in travel abroad and the cost of accommodation for what might be a stay of many weeks.

There are numerous periodical titles with current and back runs available through microfilm and micro-opaque publishers and, in many cases, gaps in library holdings can be filled through this medium. Generally speaking, the sale of microtext editions is conditioned by the purchaser having a current subscription for each of the titles required.

It is pointless at this stage to give long extracts from the publishers' catalogues. Rather than do this, the main microtext publishers are listed below, with a few items of possible interest, leaving it to the enthusiasts to write for full information. It is worth while noting that microtext publishers are anxious to help librarians and invite inquiries for titles that are not already listed.

Microfilms

UNIVERSITY MICROFILMS LTD., Dering Yard, 167 New Bond Street, London, W.1.

Microfilm editions of more than one thousand current periodicals are available; of these over one hundred are British titles. A wide range of back volumes has also been reproduced. New titles will be announced in a bi-monthly publication *Microcosm*. The 1957 catalogue lists periodicals alphabetically by title and doctoral theses available on film are abstracted in *Dissertation Abstracts*.

T.I.D.U. of the Department of Scientific and Industrial Research supply microfilm copies of reports included in the subject lists which the unit circulates to industry and elsewhere.

United States Government research reports are often so specialized that the demand for them does not warrant the reproduction of printed copies. The Library of Congress hold the originals and will make microfilm copies (or photocopies) upon demand. These reports are listed monthly.

The same principle applies to reports prepared by organizations under contract to the Atomic Energy Commission, those which are listed in *Nuclear Science Abstracts*.

Microfiche (Translucent)

(Most of the microfiche publishers offer paper contact prints.)

The International Documentation Centre in Stockholm is acting as a clearing house by cataloguing all important works so far recorded anywhere on fiche. It will publish a monthly catalogue *Micro Library*, supply positive copies of fiche on request, act as intermediary for ordering fiche, and also publish literature difficult to print or to publish in any other way, such as very special scientific studies, reports, articles with many illustrations, etc.

In France the following publishers have microfiche and micro-opaque reproductions of their periodicals and other publications, mostly of those now out of print.

LES ÉDITIONS DUNOD, 92 rue Bonaparte, Paris.

LES ÉDITIONS GAUTHIER-VILLARS, 55 quai des Grands-Augustins, Paris. (Includes *Comptes rendus, Journal des Mathematiques,* etc.)

LA LIBRAIRIE MASSON, 120 Boulevard Saint-Germain, Paris.

MICROTHÈQUE-FRANCE, 44 rue Chanzy, Paris, issued a catalogue in 1953 of modern journals and other works in microform.

IOTA SERVICES LTD., 38 Farringdon Street, London, E.C.4.

A microfiche and micro-opaque service is offered to customers for the reproduction of their own material. The company intend to reproduce back runs of journals as soon as permission has been received from the various publishers. For the moment periodicals reviewed in their *Index of Technical Articles* are being filmed so that paper enlargements can be supplied upon demand.

Opaque microtext

1 *Microcard*

THE MICROCARD FOUNDATION, Box 2145, Madison 5, Wisconsin, is the largest publisher of Microcard editions.

The various issues of the *Microcard Bulletin* list a most impressive range of scientific and technical periodicals, including certain Soviet scientific journals and *Comptes Rendus.*

Useful titles now include:

ASME Transactions, vols. 55–78, at $200.
Journal of Applied Mechanics, vols. 1–23, at $60.
Mechanical Engineering, vols. 28–78.
Journal of Aviation Medicine, vols. 1–27, at $45.
N.A.C.A. Technical Notes (Nos. 2548–3488) at $499.

The largest project to be microcarded is the *Unclassified Atomic Energy Commission Reports* from 1947.

The total number of cards from commencement to 1954 was nearly 10,000. There were 1,485 Microcards for 1955, whilst the January–June 1956 consignment of reports comprises 4,636 cards.

THE GODFREY MEMORIAL LIBRARY, Middletown, Connecticut, which at one time was associated with the Microcard Foundation before the latter moved to Wisconsin, publish all U.S. Chemical Patents from 1952 and the U.S. Patent Official Gazette from 1950.

Other publishers of micro-opaque cards include:

J. S. CANNER & CO. INC., 618 Parker Street, Boston-Roxbury 20, Massachusetts.

HITCHCOCK PUBLISHING CO., Microfilm Division, 1115 Seventeenth Street, N.W. Washington 6, D.C.

M. BENDER & CO., 255 Orange Street, Albany 1, New York.

2 *Microprint and Microlex*

READEX MICROPRINT CORPORATION, 115 University Place, New York 3. (100 pages on 6 in. × 9 in. cards.)

Since 1941 a number of significant projects have been reproduced including the cumulative subject catalogue of the Library of Congress 1950–54, all current and past publications of the United Nations and the Index-catalogue of the Army Medical Library, U.S. Surgeon-General's Office. Later projects include all scientific and technical articles abstracted in *Nuclear Science Abstracts*, the sixteen volumes of the Geneva Conference on Peaceful Uses of Atomic Energy and the complete works of Albert Einstein.

MICROLEX CORPORATION, 1 Graves Street, Rochester 14, New York, specializes in American and Canadian law reports. (400 pages on 6½ in. × 8½ in. cards.)

CATALOGUING

One of the most favourable features put forward in support of microfiche and even more strongly for the 3 in. × 5 in. Microcard is the ease with which they can be filed in a conventional card cabinet. Suitable headings are added to the top of each card—author, title, report series or subject classification—whilst an abstract and bibliographical details can be added to the reverse side of the opaque card.

This facility for filing the actual document where a catalogue card would normally go might be accepted by some librarians as a useful economy in eliminating part of the cataloguing costs.

Depository libraries for Atomic Energy Commission reports file their micro-opaques direct under the series reference, relying entirely on *Nuclear Science Abstracts* for author and subject references. This appears to be a most necessary economy in view of the large number of cards accruing.

STORAGE AND BINDING

These two problems have been considered as inter-related and are treated as one.

Most librarians, office administrators and others are loath to discard relatively little-used reference material, whether it is in the form of periodical literature, newspapers, books, press cuttings, correspondence or plans and drawings. There is a constant flow of new stock, however, and there must come a time when every square foot of floor space has been taken up without any action having been taken earlier to prevent an impossible situation.

Disregarding for the moment the use of microrecords, there are a number of ways in which the shortage of filing space might be tackled.

I am probably safe in saying that there is a predominant use of conventional steel stacks in libraries where the aisles take up more floor space than the actual shelves. This wasted space could be utilized more economically by installing rolling shelf units, bracket-type shelves or swinging units, although the capital outlay might be quite high. Mr. Fremont Rider in his *Compact book storage* (Hadham Press, New York, 1949) makes further suggestions for the economic shelving of less used research material.

Even with these methods, the storage space gained will be filled eventually. Therefore they are not permanent solutions.

A system of discard without considering microrecording is an additional way of alleviating the problem but there are many complications. A sound scheme is difficult to formulate and its successful operation would depend on interlibrary co-operation. An interesting article embodying the recommendations of the Institute of Secretaries on a policy for the retention and destruction of documents has been published in *The Secretary*, April 1958, pp. 155–60.

Extensive book stacks represent high rental and maintenance costs apart from any other charges. Dispersed storage such as is operated by government departments involves delay in retrieval and transport costs. Discard means loss of independence and reliance on another library which, in turn, involves time wastage, postal and handling charges.

The solution appears to be a simple one; why not resort to microrecords in one form or another, or in combination, and relate it to a discard policy? Having decided to discard after microreproductions have been made, the question of binding the remainder then seems straightforward. It is presumed that these existing volumes are required because of their more constant reference value.

Bound volumes are not easy to handle, however, when photocopies have to be made. A whole year's issue is in the hands of one reader, thereby preventing further usage at the same time and in another place. In a large system a duplicate microform copy (or copies) of the bound volume would facilitate satisfactory dissemination of information.

The idea of having by the side of the reader, without any undue movement on his part, the equivalent of hundreds of linear feet of reference material is an exciting thought. As an example, think in terms of using *The Times*, comparing the handling of full-sized bound volumes with the 35-mm. film version.

COSTS

The table at the end attempts to break down costs in comparing conventional with microfilm storage. The figures arrived at were based on a number of assumptions. Any disagreement could form the basis of future discussion. The analysis only goes part of the way, however; it has been impossible in the time available to make any approach towards the assessment of varying annual building costs per square foot. Conversion to microtext would appear increasingly favourable as annual storage charges become larger.

1. I have assumed that relatively inexpensive steel shelving is being used, making use of the greater height. The figure 4,600 pages/linear foot is that arrived at by Pritsker and Sadler at the Columbia University School of Engineering.*
2. The values for high-speed 16-mm. filming can only be attained if the literature being handled is reduced to single sheets by stripping and guillotining. The costs of £225 and £256 are likely to be useful where single-sided sheets have to be handled. Otherwise, for double-sided library periodical literature, slower handling time increases conversion costs to £333, which, even so, is just over one-third of the cost of binding and conventional storage.
3. Commercial rates for 35-mm. filming might prove prohibitive to many libraries. For a reasonable outlay, however, the work could be done on the premises by one's own staff at a cost just over half the conventional storage cost.

   Microfilm editions of discarded periodicals appear to be 25 per cent dearer than the cost for binding. At ¼*d.*/page as quoted by University Microfilms Ltd. comparison is then favourable.

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* ALAN B. PRITSKER AND W. SADLER. Evaluation of microfilm as a method of book storage. *College and Research Libraries*, July 1957, pp. 290–6.

4 & 5. Micro-opaque card reproduction is the most economical only where the number in an edition exceeds twenty-five. Microfiche is an economical proposition if one has a camera. In edition form it is more costly at the moment than a microfilm equivalent.

In considering utilization of one form or another, however, factors other than costs have to be accounted for, ones that might well outweigh the price aspect.

SUMMING UP

Having got so far, I realize that there is still much to say about the pros and cons of microrecords. There is a substantial literature on the subject anyway.* I will conclude, therefore, by making a few salient observations on the usage point of view.

Scientists and research workers prefer the original, if available. Some opposition to microreading, particularly the opaque form, stems from faults in the design of certain readers: images may not be sharp enough; illumination not sufficiently diffused to avoid eye strain; part of a page out of focus; incidental light reflections on the screen coming from room illumination, etc. Further resistance stems from the conservatism of scholars who distrust anything new. A real difficulty is the busy executive who wishes to read a document during travel or to take it home for study.

Neither microfiche nor micro-opaque can replace microfilming for bulk duplication and storage of large masses of little-used material. They cannot replace the printed page for extensive distribution.

For limited numbers of copies, however, and for speedy and inexpensive distribution, microfilm is very suitable. As a general rule, it can be said that if the material to be copied can fill a decent length of film and under ten copies are required = Microfilm.

A hundred-page thesis where from fifteen to twenty-five copies are wanted = Microcard.

Microfiche might be considered suitable for shorter-length runs where a few copies are required, but this depends on one's attitude to opaque versus translucent.

Microfiche is competitive in cost if produced within the establishment. It is simple to retrieve and view. It has the advantage of easy, inexpensive enlargement when required and the viewing apparatus necessary is inexpensive to produce. A number of readers can be purchased for one establishment. The criticism that film lacks resistance to wear is likely to be overcome in the near future.

Microcard is most convenient for self-indexing. It is economical in the number of pages per card. Readers are quite dear, ranging from £100 upwards, and there needs to be design improvement in this country before the medium is accepted on a wider scale. Although some manufacturers claim that enlargements are possible there is little evidence to support it.

Enlargements are sometimes necessary—graphs, tables, drawings, etc., are required as separates by design staff for frequent usage. Standard of production

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* See: Library Association Pamphlet No. 17, *Microrecording in Libraries,* for bibliography. Also C. E. Lewis, *Microrecording: industrial and library applications*, Interscience, 1956.

Estimated Costs of Conventional and Microtext Storage

	Pages/Day	Material Cost/Page	Total Cost/Page	Total Conversion Cost	Floor Space (3 ft. Aisle assumed with all Equipment)		Cost of Storage Equipment	Total Cost of Conversion and Storage Equipment
500,000 pages of periodical literature assuming size 8 in. × 11 in. 4,600 pages per linear foot (approx. 864 volumes)		Binding (Rexine)		£850	Steel shelving 51 sq. ft. (108 linear feet) 8 ft. × 3 ft. × 12 in. units		£60	£910
1. REDUCED TO MICROTEXT								
2. 16-mm. high-speed (19:1 reduction 2,400 pages/100 ft.)								
Commercial			0.54*d.* (over 5,000 exp.)	£1,125	208 reels (4 in. × 4 in. × ⅞ in.)	9 sq. ft. (cap. 512 reels)	£26	£1,151
Own Facilities (Camera: £700)								
Automatic	60,000	Material 17*s.*/100 ft. Processing 3*s.*/100 ft. 0.1*d.*	0.108*d.*	£225				£251
Hand fed	21,000		0.123*d.*	£256				£282

Note: The above two methods assume single-sided sheet only. For double-sided sheets hand-fed operation is necessary reducing the approximate speed of production to about 1,000 exposures/hour, i.e. 7,000 pages/day = 0.16*d.* total cost/page. Total conversion cost = £333

	Pages/Day	Material Cost/Page	Total Cost/Page	Total Conversion Cost	Floor Space		Cost of Storage Equipment	Total Cost of Conversion and Storage Equipment
3. 35-mm. Hand-fed (19:1 reduction (approx.) 4 pages per frame = 3,200 pages/100 ft.)								
Commercial		(Average type of library work)	1.2*d.*	£2,500	159 reels (4 in × 4 in. × 1¾ in.)	9 sq. ft. (cap. 256 reels)	£26	£2,526
Own Facilities (camera + bookholder £500)	7,000	Material 33*s.*/100 ft. Processing 15*s.*/100 ft. 0.18*d.*	0.25*d.*	£520				£546
Edition (published) (University Microfilms quote ¼*d.*–¾*d.*)			(say) 0.5*d.*	£1,040				£1,068

4. Microfiche (transparent)								
(cameras £750 + £150 = positive camera + dark-room equipment)								
Commercial			1.4*d.*	£2,916	16,666 (5 in. × 3 in.) fiche	5.6 sq. ft. (cap. 17,000 to 20,000)	£50	£2,966
Own Facilities	5,000	Material and Processing 0.12*d.*	0.216*d.*	£450				£500
Edition (published) at 2*s.*/fiche			0.7*d.*	£1,458				£1,508
5. Micro-opaque card								
6–10 copies (average 48 pages/card)			0.69*d.*	£1,437	10,416 (5 in. × 3 in. cards)	5.6 sq. ft. (cap. 17,000 to 20,000)	£50	£1,487
11–25			0.5*d.*	£1,040				£1,090
26–99			0.37*d.*	£770				£820
DRAWINGS—UP TO 30 in. × 40 in.								
6. Half-plate (70 mm. = ⅓ size and cost) (4¾ in. × 6½ in.) (camera £970)								
Commercial			3*s.* 6*d.*	£5,775	33,000 drawings	6.6 sq. ft.	£160	£5,935
Own facilities		Material and Processing 8.91*d.*	1*s.* 3*d.*	£2,062				£2,220
Full-sized drawings						580 sq. ft.	£1,200	£1,200

Note: Purchase tax has not been included; some establishments may be exempt from this.

is quite high but micro-opaques are being issued where it is impossible to interpret certain formulae and data. The fault may be with the original, in which case it would have been better not to have reproduced at all.

Microfilm for regular use is slower than the other two forms in handling. Considering the lower cost of reproduction, however, the utilization of roll film could become acceptable, no doubt without difficulty.

In large library and information systems duplication of stock by microforms saves money and speeds up the dissemination of information. For interlibrary loans large bound volumes would not have to be packed and transported, leading to a longer life.

Microrecords will become an increasing part of the normal library stock. Fuller exploitation will result from:

a. propaganda;
b. first-class reading facilities from improved design;
c. cheaper apparatus.

The micro-opaque card as an edition will most likely win the race between microforms because of its already wide usage in the United States and the extensive range of titles already in existence.

MICRORECORDING

BY H. R. VERRY, F.I.B.P., A.R.P.S.

Aslib Aeronautical Group Conference, Cranfield, 13th April 1958

I AM using the term microrecording to refer to all forms of microtexts, including the opaque methods. Microrecording may be defined as a method of making images to a reduced size which are unreadable by the naked eye except with the aid of an optical viewer or other similar means.

I propose in this review to discuss all forms of microreductions, including both the roll film and the methods which use cut film, transparent sheets or opaque cards. I feel, therefore, that it is necessary to make this observation regarding the present use of roll film and the new flat techniques: roll and flat methods of microrecording do not necessarily compete with each other; the flat methods are an extension of the roll film system and are designed generally to meet entirely different purposes. Perhaps I could emphasize this point by quoting briefly from Freemont Rider, the originator of microcards, "Microfilm is not outmoded. Microcards should not and will not entirely replace it; quite the contrary, we should further the idea that a correlation of all the various forms of microtexts into one integrated whole is both possible and extremely desirable."

It may therefore be asked what considerations are necessary when determining whether to use roll film or one of the many flat methods. Bearing in mind that the cheapest method of microrecording and also the cheapest way of re-creating copies is from roll microfilm, the flat methods must have advantages to offset their additional cost. These advantages are generally those of filability and therefore accessibility.

Documents which are recorded for security only or are used infrequently will be quite suitable in roll form. Indeed for security purposes roll film would be preferable, because if their originals were destroyed they could be re-created at high speed producing permanent copies by Xerography or one of the other electrical processes—at speeds up to 20 ft. per minute.

Frequently-used documents are much better recorded by one of the available flat methods. In flat form microfilm has all the advantages and the convenience of filed documents. Against the slight disadvantage of having to use a reader there are the advantages of reduced space and easy accessibility.

As most of you may know, there are two sizes of roll microfilm, 16 mm. and 35 mm. These films are also able to produce images of various sizes on the same film. In both the 16-mm. and the 35-mm. film some cameras can produce an image on one side of the film only, the film being passed through the camera again to record images on the other half of the film. An alternative method possible with some 16-mm. apparatus is to photograph simultaneously the back and the front of a document. This is made possible by lenses which are able to give a high degree of reduction and by the use of a mirror which reflects an image of the back of the document being filmed.

The apparatus used for 16 mm. in this country is, with one exception, known as continuous or automatic. It is designed to take single documents only and these are limited to a width of about 11 in. As the document is fed into the machine it is automatically recorded on 16-mm. film, the film and the document being moved synchronously before and behind a lens system. When the document has passed the lens the film is automatically halted until the next document is in position. It will therefore be seen that, although the camera is limited to single sheets up to about 11 in. wide, it is able to record documents of almost any length. It is said that about 8,500 average letters can normally be recorded on 100 feet of 16-mm. film or about 18,000 cheque-size documents when 8-mm. image is used at extreme reduction.

The speed of the 16-mm. type of apparatus is generally very much higher than that of 35-mm. Feeding by hand of up to about 5,000 documents per hour has been achieved but by automatic feeds documents can be made to pass through the machine at speeds of up to 21,000 per hour.

Apparatus using 35-mm. film is generally much slower in operation. Under normal circumstances perhaps 2,000 frames a day may be considered a reasonable average output. The advantage of this type of machine is that it is able to photograph large documents either as single sheets or in book form. This larger film generally gives either 800 or 1,600 images on a roll of 100 ft. of film, which may be perforated or unperforated. The latter can give a much larger image, which is particularly useful for recording newspapers and similar documents.

Recently there has been an interesting addition to the roll film sizes by the introduction of 70-mm. film which is now available in this and other countries. It has been introduced as an alternative—or at least an intermediate size between 35-mm. and the Statfile or Barcro type of apparatus which normally uses film about 6½ in. × 4¾ in. These cameras are intended chiefly for copying large documents such as plans and drawings.

The 70-mm. size would appear to be a logical step from 35 mm. because it gives over four times the area of the smaller film. The apparatus developed by Recordak has proved that, in both theory and practice, it is possible to obtain extremely good quality negatives from large drawings. I make these statements not merely from results shown to me by the manufacturers but also from our own experience and from that of other business firms who have used this equipment.

The 70-mm. apparatus is faster in operation than the larger type, and this additional speed, together with the cheaper film, combine to make this machine practical from every point of view. It is also useful for recording masses of paper cuttings which vary considerably in length but which are related to each other. I want to specially commend this size to all of you who consider the use of larger microfilm for recording drawings, plans and similar large documents. This film can be filed either as roll film or single sheets; it can be re-enlarged to provide a copy of the same or a different size, either opaque or on a translucent material for dyeline printing.

Those of you who are not familiar with these techniques may wonder what factors determine the use of 16- or 35-mm. film or the reduction ratio necessary to obtain a satisfactory result with any method of microtext. The answer depends chiefly on a number of considerations, two important ones being the quality of the original copy and the purpose for which the microfilm is required.

Also the size and the thickness of the original document will be important because this may make the use of 16 mm. impossible. It will be readily appreciated that originals which are printed in bold letters will permit considerably more reduction than originals of the same size or even smaller which have thin pencil lines or weak characters such as are found in poor carbon copies. A reduced image which has to be studied over long periods by technical or scientific personnel must be infinitely better than one which is scanned for a few brief moments. Film required for security purposes should always be of good quality, otherwise if it is necessary to enlarge it again its value will be much impaired.

Perhaps the most important factor in making microrecords is always to produce a microfilm which is acceptable for the purpose for which it is required. Every piece of microfilm, or indeed any microrecord, which can only be read with difficulty is a condemnation of the process and is liable to cause irreparable harm to the method.

In an effort to break away from film in roll form man has devised many systems ingenious and otherwise. It is now many years since Dr. Sayce first conceived the idea of cutting roll film into strips of ten pages, thus breaking the long-established practice. On the Continent cameras were designed to produce these strips together with an index page, and every form of filing system was adapted to take them. Later shorter strips were placed into celluloid covers or jackets, and later still were inserted in cards including both the needle sort and punched types.

These flat forms of microfilm are often referred to as Unitized Microfilm. This is a useful term which indicates that the film has been broken down to small units. All these methods which utilize roll film and break it into flat forms have specific advantages. They enable the film to be taken with an ordinary roll film camera and also they allow existing roll film to be changed into a flat form.

The transparent jackets are especially suitable for cumulative filing. They can be used in hospitals for patients' case notes because they can be added to at will, or frames may be taken away. This ability to alter microtext overcomes one of the greatest disadvantages of microfilm in roll or some other flat forms.

Microfilm which has been inserted into punched cards has the dual advantage of the rapid selection method available with that technique and also the reduced storage capacity of microfilm. When I was in the States surveying microfilm about 1951 it was said that there were at least 2½ million of these cards in use. Every company I visited reported that their use was increasing tremendously. Machines have now been designed to insert the film into cards at the rate of 2,000 per hour, which indicates how widespread is their use at the present time.

In addition to the methods just described there are techniques which prepare micro images in sheet form on transparent film or opaque card. These are called microfiche (or sheet) or Microcard.

I have carefully examined both of these types. It is true to say that the translucent type has much in its favour but the card is much cheaper to produce in quantities and psychologically very much better to handle. At present it is easier to obtain good definition on sheet film and the manufacture of reading apparatus is less difficult. However, I feel that the production of really good cards is not difficult and, with more attention to the important details, cards of high quality should be readily produced.

The micro-sheet and the Microcard are usually printed with an index on the top which can be easily read by the naked eye. Some microcards contain a more detailed abstract on the back of the card. This was the original idea of Mr. Freemont Rider, and there is much to be said in favour of this method.

The word Microcard generally refers to the product of the Microcard Foundation of America and is a card approximately 5 in. × 3 in. in size. There are other cards of larger sizes, the Microprint produced by Albert Boni in the United States is 6 in. × 9 in. in size and contains one hundred micro images, and is produced by lithography; thus unlike Microcard it has an ink and not a photographic image. The ink printing medium does not permit the same degree of reduction as the photographic image, and therefore microprint is not so economical in space but may be cheaper to produce in large quantities and it has archival permanence.

The American Law Society has produced cards called Microlex. These cards are 8½ in. × 6½ in. and contain 200 images. The cards deal only with legal subjects and are made available to the legal profession together with a suitable reader. Their method of preparing the negative differed from that generally used in the United States and followed the method used by the Dutch Goebel camera, which uses a single sheet of photographic material on which are produced rows of micro images. The negative produced by such a camera can be printed on either translucent film or opaque card and therefore produces either a microfiche or a micro-card. It can also be used to make an enlarged copy if required. I regret to say that the high price of the Dutch apparatus has restricted the production of both microfiche and micro-card in this country. There are some interesting variations of the flat methods: two of these, known as Micro-strip and Micro-tape, consist of opaque photographic strips printed from 16-mm. roll film; the back of these copies is coated with an adhesive which enables them to be mounted on cards of any size. Where cumulative filing is required these are particularly suitable because they allow one or more frames to be cut off the paper roll and attached to the appropriate card; they are also useful for producing micro-cards from existing roll films, thus combining both the roll and the flat techniques.

Before leaving this interesting subject it is perhaps reasonable to ask what is the future of microrecording? This is a difficult question to answer, but I believe that with an extended and more sympathetic use of all these methods there are far wider horizons yet to explore.

Our first task is to eliminate the objections which are now so readily made regarding their use. The coming of TV has erased the complaint about eye strain. Some people will say that documents on microfilm cannot be found as readily as the originals. This need not be true. If the microfilm operation is undertaken with care and reasonable forethought and indicating cards are more widely used it should be far quicker to search microfilm than files of originals, especially when the reduced image may allow the film to be kept in a convenient place within the same room and not in some little-used basement. The flat techniques which offer all the advantages of ordinary card filing must surely eliminate this long-standing complaint regarding microfilm methods.

Also if we make the quality of microtexts acceptable and the reading apparatus easy to handle and read there can be little serious objection to the use of any of these methods. In this connection I like the practice of filming a card which indicates when the originals are of poor quality. It does save much abuse being levelled against the microfilm process.

It would require a prophetic vision to assess the possibilities of the flat mediums. The future holds the key and only a wider use of these methods will indicate the possible applications which they may be able to serve.

REPORT LITERATURE USED BY AERODYNAMICISTS*

BY C. W. J. WILSON, F.L.A.

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INTRODUCTION

PARTICULARLY since the 1939–45 war a number of studies of user-habits and of the literatures of science and technology have been made, such as those by Fussler, Stevens and Shaw.[1–4] Most of these studies are American and most of them have been concerned with periodicals, and to a lesser degree with books or monographs. Only a comparatively few subject areas have been examined, and none has been restricted solely to the research report. Discussions about report literature have generally been concerned largely with the pressing problems of identification, acquisition, handling, cataloguing and dissemination, and statistics given have been in broad terms which are not very helpful in particular situations. In view of the phenomenal growth of the report as a vehicle for communication of scientific information it is clearly of value to the R.A.E. library services to know in more detail the extent to which it is used and the pattern which that usage takes.

Towards this end, the research reports on loan to one specific, well-defined group of scientists at the R.A.E., aerodynamicists, have been analysed and the results are presented here.

METHOD OF ANALYSIS

In the studies mentioned the usual methods of analysis are reference-counting, or citation analysis, applied to selected 'source' journals in subject fields; the use of questionnaires; the observation of users' activities and problems; and the diary method, in which scientists are persuaded to maintain detailed records of their information-gathering habits over representative periods of time. (Shaw lists seven methods.[4]) Here, the loan records of research reports in the R.A.E. Aerodynamics Department Library were analysed on a typical day in December 1957. A new system of recording loans was introduced in January 1957, with such an analysis as an original intention. This paper is based on this new system, and the results are not unduly inflated or distorted by overdue or disused material.

At the same time, the practice of lending specific reports, as they arrive, to particular persons because of their likely interest, may give a bias towards recent papers.

Books and periodicals were excluded from the examination because, with such notable exceptions as the *Journal of the Aeronautical Sciences*, *Journal of Fluid Mechanics*, *Aeronautical Engineering Review* and others, they are known to be of much less value than reports to this group of aerodynamicists. Also, published material may be obtained from other sources, such as the R.A.E. main library, or privately, whereas all reports of aerodynamic interest are channelled through the departmental library to the appropriate section or individual, and not direct from the main library to individuals. Some unpublished papers are made available to some persons by virtue of committee membership, or as private communications, but the great bulk of reports are available only through the departmental library.

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* This paper was given at the Aslib Aeronautical Group Conference, Cranfield, April 1958. The author is now at the Atomic Energy Research Establishment, Harwell.

A significant limitation to the survey is that Aerodynamics Department's own important series of Reports, Technical Notes and Technical Memoranda are excluded. They are generally retained, not lent, and their use is therefore less easily assessed.

The series of reports distributed by Ministry of Supply Technical Information and Library Services, commonly known by their distinctive accession number, 'P' reports, have all been reduced to their source of origin and date. Likewise, this has been done as far as possible for similar series from the Central Radio Bureau, the Admiralty Centre for Scientific Information and Liaison, and for all Aeronautical Research Council Reports, Current Papers and Reports and Memoranda.* These organizations therefore do not figure in the table as report-issuing agencies, but originators are more accurately shown. Various series of the issuing bodies are not noted, with the exception of National Advisory Committee for Aeronautics papers, where the bulk of reports merits a breakdown into research memoranda, technical notes, etc.

TABLE OF REPORTS ON LOAN (SEE APPENDIX): DISCUSSION

The table is arranged alphabetically by country of origin, and then by issuing agency. The reports for each originator are then given in corresponding date columns for the periods previous to 1937, 1938–42, 1943–47, and then for each year to 1957.† Totals are in the right-hand column, and grand totals are given at the end of the table.

The total number of reports on loan was 1,154, of which the following details are significant:

Reports dated 1957 amounted to 38.8 per cent of the total.
Reports dated 1953–57 inclusive amounted to 83.9 per cent of the total.
Reports dated 1948–52 inclusive amounted to 13.3 per cent of the total.
Reports dated earlier than 1948 amounted to 2.7 per cent of the total.

The figure of 38.8 per cent for 1957 reports compares with that of 26.2 per cent for current periodicals, shown in an earlier study.[5] Since there may be a time-lag, sometimes of years, in receiving some reports (especially American) because of security restrictions, this figure of 38.8 per cent is even more impressive. However, the earlier paper concerned all periodicals lent to a large group of scientists working in diverse subject areas, whilst this paper is confined to one well-defined specialist group. The high percentage for the current year shows awareness and use of recent papers, (in so far as possession of them can be equated with use), and a satisfactory distributive system is implied.

Tentatively, the two papers would indicate a longer working life for the periodical as against the report, or that aerodynamicists require more recent information than other research workers. It is noticeable that 95 per cent of journals lent (to a broad group) were concentrated in the twenty years 1937–56, but that 97 per cent of reports lent (to a group with specific interests) were concentrated in the ten years 1948–57.

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* Note: Aeronautical Research Council papers on loan amounted to sixty-four Reports, fourteen Current Papers and twenty-one Reports and Memoranda.

† For convenience of printing, issues for 1937–50 have been cumulated under 1950.

SOURCES OF REPORTS

Remembering that R.A.E. Aerodynamics Department papers are excluded, the table shows that reports originating in the United Kingdom came to 239, or 21.6 per cent of the total; those from the United States amounted to 811, or 70.2 per cent; and the remainder to 104, or 8.1 per cent. The United States is therefore shown to be by far the most important source of report literature for aerodynamicists. Of the American papers, those from the National Advisory Committee for Aeronautics totalled 51.8 per cent of all reports on loan, and 73.7 per cent of all American reports on loan. No other organization remotely approaches the volume shown in the table against N.A.C.A.

No papers from the Soviet Union were on loan for the twin reasons of non-accessibility of research reports and the exclusion of published papers from this study.

CONCLUSIONS

It is obvious that American reports are of exceptional importance to this group of aerodynamicists and that the group is primarily interested in very recent material. The implications of this are as follows:

a. It is necessary to obtain American reports with the minimum delay. This is already largely done through Ministry of Supply, T.I.L.

b. It is not necessary to hold in Aerodynamics Department Library stocks of papers from external sources over ten years old, although obviously they should be held in the R.A.E. main library and be available at call. Possible exceptions are Aeronautical Research Council papers.

c. The Department is interested in retrieval systems more effective than the N.A.C.A. subject indexes currently employed. Any such new information retrieval system should be designed in accordance with such excellent principles as Herner and Meyer give.[6] One of these is that the system must reflect the actual literature to be organized as well as the actual purposes for which the literature is used. This paper gives a clearer outline of the report literature of one subject area requiring organizing and indexing. A point to remember here is that the ideas in British reports are likely to become common currency through the normal intercourse between Aeronautical Research Council, Government departments, universities and firms. They are known, and therefore represent less of a retrieval problem in this library than the foreign report. A new retrieval system should be restricted to indexing material not more than ten years old and should be concentrated on United States papers. This would place a practical, realistic limit to the amount of labour involved in a detailed indexing programme and would provide a more useful instrument for literature searching. Unquestionably it is desirable to have a complete subject approach to all the papers produced by, or received in, the Department, but it is a more economic proposition to employ a new system on what is most likely to be required, and least likely to be known about, i.e. recent, largely American, research reports.

d. In the compilation of bibliographies or in literature searches comprehensive examination of papers under ten years old should normally suffice.

e. Cards in the N.A.C.A. subject index in Aerodynamics Department Library representing papers over ten years old should be annually weeded out and either destroyed or stored elsewhere. This would keep the conventional catalogue within manageable limits.

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TABLE OF REPORTS ON LOAN

	1937 to 1950	1951	1952	1953	1954	1955	1956	1957	Total
Argentina						1			1
Australia									
Aeronautical Research Laboratories		1			1	3	11	6	22
Department of Supply								1	1
Weapons Research Establishment ...								1	1
Canada									
Canadian Armament Research and Development Establishment ...				1					1
Canadian Experimental and Proving Establishment							4		4
National Aeronautical Establishment		1			1		3	3	8
National Research Council of Canada		1							1
Suffield Experimental Station ...								1	1
University of Toronto. Institute of Aerophysics			1	1	1		1		4
France									
St. Louis Ballistisches Institut ...	1								1
Office National d'Études et de Recherches Aéronautiques						1	1	2	4
Germany									
Deutsch Versuchsanstalt für Luftfahrt...							4		4
Braunschweig Technische Hochschule						1			1
Holland									
Nationaal Luchvaartlaboratorium ...		1				3	5		9
Sweden									
Flygtekniska Försöksanstalten ...							2		2
Kungl Tekniska Högskolan	1				1				2
United Kingdom: (a) Firms									
Aircraft Research Association ...								3	3
Armstrong Whitworth							1	3	4
Blackburn and General Aircraft ...								1	1
Boulton Paul								1	1
Bristol Aircraft								2	2
British European Airways								2	2
De Havilland							6	3	9
English Electric			1	1	2		2	10	16
Fairey Aviation			1	3	3	2	1	1	11
Gloster Aircraft								1	1
Handley Page						1		1	2
Power Jets	1								1
A. V. Roe								7	7
Rolls-Royce					1				1
Short Brothers and Harland ...							2	6	8
Vickers Armstrongs								4	4

	1937 to 1950	1951	1952	1953	1954	1955	1956	1957	Total
b. **Universities**									
Bristol University			1	1					2
Cambridge University					1		1		2
College of Aeronautics	2			1		1	2	2	8
Glasgow University	1								1
Imperial College						1	1		2
Manchester University	2								2
Oxford University					1			1	2
Queen Mary College						1			1
Southampton University						1			1
c. **R.A.E. Departments**									
Armaments								1	1
Chemistry								1	1
Electrical Engineering							1	1	2
Guided Weapons			1	1	3	2	2	13	22
Instrument and Photographic ...								2	2
Library		1				2		7	10
Mathematical Services				1				1	2
Mechanical Engineering		1						4	5
Naval Air								5	5
Rocket Propulsion								1	1
Structures	2			1	1	3	1	14	22
Trials							6	1	7
Others								2	2
d. **Government Departments/Establishments**									
Admiralty Research Laboratories ...								1	1
Aircraft and Armament Experimental Establishment								3	3
Armament Research and Development Establishment						1		1	2
Central Flying Establishment ...								1	1
Explosives Research and Development Establishment		1		1			1		3
Ministry of Supply Technical Information and Library Services	1						1	3	5
National Gas Turbine Establishment		1		1	2	2	2	4	12
National Physical Laboratory ...	8		4	2	4	5	2	10	35
Others						1			1
United States of America									
Air Research and Development Command						2	3	1	6
Aerojet Engineering Corporation ...	1								1
Arnold Engineering Development Center							9	3	12
Ballistic Missile Agency							1		1
Ballistics Research Laboratory ...		2	1				5	1	9
Bendix Aviation							1		1
Boeing Airplane	1						1	1	3
Bolt Beranek and Newman							1		1
British Joint Services Mission ...						3	2	7	12
Brooklyn Polytechnic Institute ...						2	2		4
Brown University						1			1

	1937 to 1950	1951	1952	1953	1954	1955	1956	1957	Total
California Institute of Technology ...	1			1		5	7	5	19
California University				1				1	2
Southern California University ...	2	3							5
Convair			2		1	2	2		7
Cornell University	1				2	3	2	1	9
Douglas Aircraft		1	2	2	1		6	1	13
General Electric	1						2		3
Harvard University	1								1
Holloman Air Development Center ...								1	1
Illinois University					1	4	2		7
Institute of Aeronautical Sciences ...	1					1	1	11	14
Johns Hopkins University	1		1				1		3
Lockheed Aircraft						3			3
Maryland University						1		2	3
Massachusetts Institute of Technology...				1	1		1		3
National Advisory Committee for Aeronautics									
Conference/Miscellaneous papers ...		1				7	3	30	41
Technical Memoranda	4							2	6
Technical Notes	18	6	3	2	12	15	26	88	170
Research Memoranda	21	15	25	28	16	33	66	137	341
Reports	15	5	3	5	1	5	6		40
Naval Ordnance Laboratory	1		2	1			1		5
Naval Ordnance Test Station		1			1				2
Navy Department			1	1		1			3
North American Aviation	1				1				2
Northrop Aircraft	1								1
Office of Scientific Research						1			1
Ordnance Missile Laboratory					1				1
Princeton University	1			1	3	1		1	7
Ramo Wooldridge Corporation ...						4			4
Rand Corporation					1			1	2
Redstone Arsenal							5		5
Rensselaer Polytechnic Institute ...						1			1
Southwest Research Institute							1		1
Stanford University							1	1	2
Tennessee University								1	1
Texas University				3	2				5
United Aircraft	2			1	1				4
Wright Air Development Center ...			1	6	5	5	4	1	22
International Organizations									
NATO Advisory Group for Aeronautical Research and Development ...				1		2	20	10	33
Commonwealth Advisory Aeronautical Research Council								4	4
Total reports on loan	93	42	50	69	72	134	245	449	1,154

Note: Aerodynamics Department papers are excluded from this survey.

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Barnes, Ralph M.
Work sampling. 2nd ed. New York, Wiley; London, Chapman & Hall, 1957. x, 283 pp. illus. tables. diagrs. $7.95.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

ASLIB CALENDAR

SEPTEMBER

FRIDAY 5th–MONDAY 8th. Annual Conference at Nottingham University.

TUESDAY 16th. Retrieval Research Project. Open Day at Cranfield.

OCTOBER

WEDNESDAY 8th. Scottish Branch visit to Messrs. Dunn & Wilson, Falkirk.

TUESDAY 14th. Furniture and Textile Groups Conference. See paragraph below.

NOVEMBER

THURSDAY 27th–FRIDAY 28th. Northern Branch Conference at Sheffield.

Mrs. Barbara Wootton

Presidents of Aslib have been persons of distinction in many fields. Mrs. Barbara Wootton, who was President in 1953 and 1954, has recently added to her laurels by being one of the first four women to be admitted to the House of Lords. Members will be very glad that Mrs. Wootton's talents are to be made available to the nation in this way, and will wish her every happiness in this additional field of activity.

Obituary

Members will be sorry to hear that Mr. C. A. Spencer, C.B.E., who retired from the D.S.I.R. some five years ago, died on 2nd July. Mr. Spencer had taken a close personal interest in Aslib's affairs for many years. It is perhaps due to him, more than anybody, that Aslib received such generous financial support from the Department during the years immediately after the war.

Aslib also notes with regret the death on 4th July of Mr. Duncan Gray, M.A., F.L.A., lately City Librarian of Nottingham and sometime Librarian, St. Marylebone Public Library. He was author of *Public Library Finance* and *Fundamentals of Librarianship.*

Aslib General Policy Developments

As members are aware, Aslib has grown rapidly both in size and in the extent of its activities during the past few years. The recent move into new premises provides a convenient opportunity to review the nature of this growth and to ensure that further development continues on the most appropriate lines. The Council has therefore decided to create a small *ad hoc* committee to discuss future trends and to make recommendations to the Council as to Aslib's future policies. Members will, it is hoped, welcome this step as an earnest of the Council's desire to keep itself fully informed as to the type of activities and services which members require, and of the Council's wish constantly to adapt its policies to accord with those requirements.

D.S.I.R. Grant

The terms of the D.S.I.R. grant to Aslib for the quinquennium 1st January 1959 to 31st December 1963 have now been announced. They are that Aslib will receive £12,000 a year provided British membership subscriptions amount to £15,000 a year; in addition, every £100 of British subscriptions will earn a further £100 of grant up to a maximum grant of £18,000 a year. These are extremely generous terms and should enable Aslib to undertake the work planned for the quinquennium with every confidence. It is a condition of the grant that Aslib should adopt an adequate research programme in the field of special librarianship and information work.

Mrs. M. E. Mackiewicz

The many members who have received help from the Aslib Information Department will be sorry to hear that Mrs. M. E. Mackiewicz has resigned her post as Information Officer at Aslib to become Information Officer to the Metal Industries Group. Mrs. Mackiewicz has been in charge of the Information Department at Aslib since January 1951 and has devoted herself, with the greatest enthusiasm, to the task of dealing with the many and varied requests for information received from members. She will be badly missed and she takes with her Aslib's very best wishes for her future success in industry.

Northern Branch Courses

The Northern Branch Education Committee, with the collaboration of the respective colleges, has arranged for introductory courses in special library and information work, to be held during the coming session at the Manchester College of Science and Technology and the Newcastle upon Tyne Municipal College of Commerce.

The course at Manchester, which will consist of twenty-six 1½-hour lectures, is designed for assistants in special libraries and information bureaux, or those setting up new departments without having had experience of information work. At Newcastle, the course of twenty-three 2-hour lectures is planned to meet the needs of junior assistants.

Both courses are to be held on Tuesday evenings, beginning 30th September 1958. Requests for full particulars and enrolment forms should be addressed, for the Manchester course, to Mr. J. C. Harrison, D.F.C., D.P.A., F.L.A., School of Librarianship, College of Science and Technology, Manchester 1, and for the Newcastle course to the Lecturer-in-Charge, School of Librarianship, Municipal College of Commerce, College Street, Newcastle upon Tyne, 1.

Furniture and Textile Groups

A joint conference of these two groups will be held in London on Tuesday 14th October. The topics to be discussed range from upholstery to the application of information in both the textile and furniture industries. One of the speakers will be Mr. Dennis Young, R.A.C.A., designer and consultant. Further details of the conference will be announced later.

New Paper for L.A. Examinations

The Library Association has announced that a new alternative in part 4 of the Final Examination will be introduced at the Winter 1959 examinations. It will be entitled 'Presentation and Dissemination of Information', and has been introduced after considerable pressure from special librarians and information officers.

Published Conference Proceedings

A complaint has been received of the publication, by some houses, of reports and proceedings of conferences under titles which are not explanatory. This practice may lead to confusion in more than one way. Firstly, libraries may obtain the material under one title, only to find that they already have it in another form; secondly, two entirely different references may subsequently be quoted for the same papers. Members who have noticed examples of this practice are asked to report them to the Director, quoting title, sub-title, and publisher of each volume, as well as the title of the conference or symposium concerned and any other source for the published material.

New Source of Out-of-print Books

University Microfilms have announced an important new service known as 'O-P Books', designed to enable librarians to obtain copies of out-of-print books not otherwise available. Reproduction is by xerography from microfilm and books are bound to give volumes which compare favourably with the originals. The method is suitable for reproduction of all types of books except those containing half-tone illustrations. It is likely to be specially valuable for reproduction of rare books and books of the pulp-paper period, of which all known copies are rapidly deteriorating. Even where demand is small the process seems to offer economic possibilities, even for reproduction of single copies, as prices are expected to be as low as 45*s*. for a book of 200 pages. At present all the work of reproduction is being carried out in the United States, but the London office hope soon to have similar facilities. A catalogue has been prepared of books already available and inquiries are invited for others not yet listed. All inquiries in the United Kingdom should be addressed to University Microfilms, Dering Yard, 67 New Bond Street, London, W.1.

Rheology Abstracts

Aslib has recently received the first issue of *Rheology Abstracts: a survey of world literature*, published by Pergamon Press for the British Society of Rheology. In volume 1, no. 1, May 1958, 172 abstracts are classified under seven broad headings, and it is intended to increase the subscription and coverage gradually.

ASLIB INFORMATION

This publication succeeds the abstracts which were formerly published in the Society's bulletin. The subscription of 40*s.* per volume of four issues must be paid in advance.

Book Design and Production

The first issue of a new periodical entitled *Book Design and Production* has recently appeared. It contains articles on various aspects of modern book production which, without going too deeply into technicalities, are designed to appeal to all those who have to deal professionally with books. An interesting feature is a section in which books are reviewed from the point of view of their physical production. *Book Design and Production* is issued quarterly by Printing News Ltd., 110 Fleet Street, London, E.C.4. The annual subscription is 35*s.*

Grant for SLA Translation Center

The Special Libraries Association has received a grant of $25,000 from the American Iron and Steel Institute for the support of the SLA Translation Center which is already partially supported by grants from the National Science Foundation and the National Institutes of Health. This new grant will enable the Center to continue its expanded programme. In March 1958 the entries in *Translation Monthly* were made available in card form. Negotiations are in progress for these cards to be added to the Aslib copy of the Commonwealth Index of Unpublished Translations.

Grants for Library and Cataloguing Research

The Council on Library Resources has made a grant of $73,800 to the United States National Library of Medicine to finance an investigation into the possible use of mechanized methods for the improvement of the *Current List of Medical Literature*. The object of the investigation is reduction of manual processing by use of punched tape operated typewriters, punched card operated cameras, and other mechanical equipment. It is hoped, as a result, to reduce the cost of compilation and so enable coverage to be increased, to reduce indexing time, to improve the arrangement and legibility of the bibliography and indexes and the method of index compilation. It is hoped also to be able to segregate references to literature on specialized subjects within the medical field. A report of the investigation will be published so that the findings may be applied to other indexing services.

The Council has also made a grant of $55,000 to the Library of Congress for a one-year programme of research into the possibilities of 'cataloguing in source'. The co-operation of a number of publishers and libraries has been obtained for this project. The publishers will submit books to the Library of Congress in page-proof form, the Library will catalogue these speedily so that full catalogue entries can be printed in the books. It is planned to cover a thousand volumes in this way. All types of libraries will co-operate in studying the effect of this procedure on library cataloguing practice. It is hoped, as a result of this research, to make great economies in cataloguing costs.

NEW MEMBERS

Corporate

Aplin and Barrett Ltd.	Miss M. H. Grieve
Belgian Congo. Service Meteorologique	N. Vander Elst
Burnley Municipal College	Miss P. Tattersall
California State Library	Miss E. Irwin
Chafer, J. W., Ltd.	C. L. Chafer
Czechoslovakian Embassy, Commercial Section	U. Homola
De Havilland Propellers Ltd.	R. Jones
Henderson-Luckin Advertising Ltd.	W. A. Henderson
India. EME School	
Kinder-Kultuurvereniging, Die	
Nigeria. Federal Department of Veterinary Research	J. I. Taylor
Nuneaton Technical College and School of Art	W. Howard Joint
Orpington Public Libraries	S. C. Waters
Parsons, C. A., & Co. Ltd.	Dr. A. T. Bowden
Rank, J. Arthur, Organization (Management) Ltd.	K. J. Wendtner
Redheugh Iron and Steel Co. (1936) Ltd.	A. A. Avery
River Thames Shiprepairers Association	A. H. Hayes
Sales Audits Ltd.	J. Robinson
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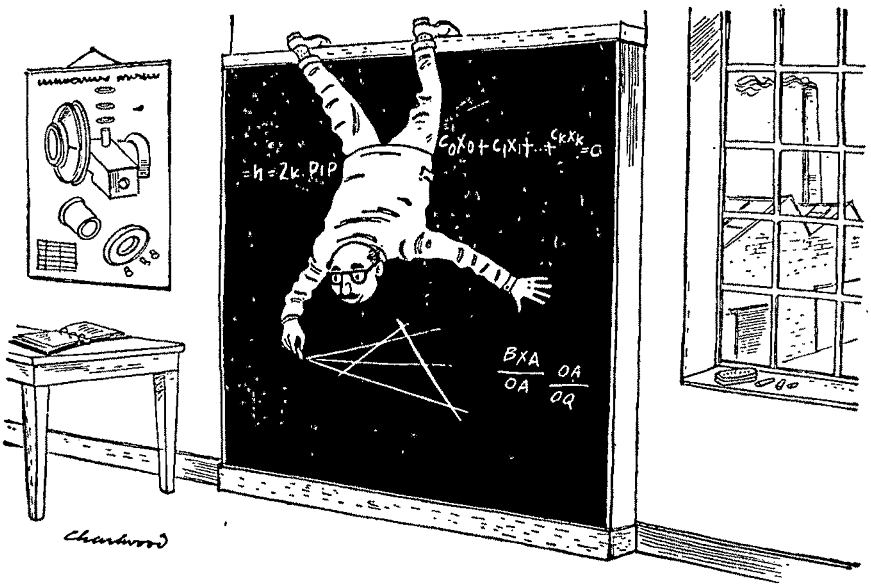

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THE RECORDS TO BE KEPT FOR BUSINESS PURPOSES

BY E. W. IVEY, A.C.W.A., O.M.A.
Work Study Officer (Clerical), The Wellcome Foundation Limited

Second Conference on Business Records, London, 10th June 1958

WHAT records do we keep for business purposes? In my opinion, far too many. If we re-phrase the question, what records *should* we keep for business purposes, I am confident that the answer is, or should be, as few as possible. Alas, this precept is not generally followed in industry, with the result that a great deal of space which could be more productively employed is wasted, and much unnecessary labour is expended on the maintenance of records which are not essential to business.

I wonder how many companies, like my own at one time, have a situation where records are kept on retention periods laid down forty or fifty years ago. I would suggest there must be many. It can so easily happen. At the time when the periods were set, space, labour and equipment were comparatively inexpensive, and as the company expanded and the hundred documents a day grew to a thousand so the record stores, staff and equipment expanded accordingly.

Quite apart from the periods of retention, there is also another aspect of this problem which is so often overlooked. Most businesses at some time or the other produce documents internally in two, three or even four parts. So often one finds that although these documents are identical they are all filed—sometimes for varying periods. The variation of the period may be quite proper relative to the needs of the departments concerned, but there is no need to keep all three or four—but only one. I found a number of cases in our own organization where a triplicated document was being kept—all parts—for one year, two years and three years respectively. We decided to keep just one copy for the maximum period, making it available for reference, of course, to all three departments.

So many companies, I find, seem to do little or nothing about the problem of over-expanding record stores so long as they have space to contain them. When the store is filled to bursting point then something must be done, but I am sure it will be agreed that at bursting time it is not generally possible to give proper consideration to the problem owing to the urgency of the situation. In these conditions, too, one frequently finds that measures are taken to relieve the immediate pressures and little or no thought is given to the future, with the result that bursting point is again reached in a comparatively short time.

In the course of a survey of filing which I conducted within my own organization I reached the conclusion that papers filed in the company fall into two broad classes, (1) everyday routine documents—representing 96 per cent of the entire mass, and (2) some permanent and historic documents—the remaining 4 per cent. In my endeavours to reduce the mass of paper we were storing I decided to attack the routine documents and did not dissipate much of my energies on the remaining 4 per cent. Although at first I felt that anything I had to say at this Conference was liable to be destructive from an Aslib point of view I now feel that this clear-out policy I am trying to disseminate may in itself be of assistance, since it is directed at the mass routine documents, thus throwing to the surface that small proportion which it is desirable to keep for historical purposes.

I cannot stress too strongly the considerable savings which can be effected by companies—especially the bigger ones—if they will realistically, and I repeat realistically, review the laid-down periods, if any, for which they retain their records. You may be interested to know that in my own company the staff of five who maintained our Record Store was reduced to nil, giving the company an estimated saving of £1,500 to £2,000 per annum in labour alone. I understand that it is proposed that when I finish speaking an extract from a film is to be shown which describes in about the space of seven minutes how this saving was effected in The Wellcome Foundation Limited. This film was recently produced by the British Productivity Council and is called 'Method Study in the Office'.

Before you see it I would like to anticipate one obvious question. Did we consider microfilms? Indeed we did. I must at this point make it clear that I am quite convinced that microfilming is a very useful tool of management and there are, undoubtedly, many occasions when it can properly be employed. I do feel, however, that one must not forget to consider first things first. In other words, when dealing with the problem of the Record Store I believe it to be a fatal mistake to fly to microfilm as an easy way out. It *is* an easy way out, particularly, of course, in terms of the saving of space, but surely the first consideration must be 'what do we really need to keep'. I am sure you will agree that it would be foolish to spend money, however little, by microfilming documents which you do not really require. Speaking of microfilming relative to filing, I may say that I reached the conclusion that unless documents are retained for a period of more than five years then microfilming is not economic. I have found a number of people confirm my views and some have even gone further and refer to even longer periods. We do not use microfilming as we keep very few documents for more than five years.

I have frequently been asked if I could produce a list of what we considered to be the maximum periods of retention for various classes of documents. I could, of course, do so, but I feel sure that this information would be misleading if used by other organizations. Only you yourselves can properly determine what these periods should be. In this connection, I was interested to read in the April 1958 issue of *The Secretary* an article entitled 'The retention of documents and the use of microfilm'. At the beginning of the article I read the following: 'The time will come when, for very shortage of space, someone will undertake to destroy what seems unlikely to be needed, and unless he himself fully understands the nature of the documents he is handling, or has been given properly considered instructions, some very serious mistakes can be made'. There is no doubt of the truth of that statement and it does, I think, underline my reference earlier on to 'bursting point' not being an ideal time to undertake a clear-out. A little later in the article reference is made to responsibility within an organization on the subject of record retention. It says, 'It is worth while to appoint some individual to be responsible for this throughout the organization'. I would go further and say that I believe it to be absolutely essential. In our own case it is the Company Secretary. You may be interested to know that this article includes a list of documents with suggested periods of retention. As I have already said, I believe it to be almost impossible to lay down any periods which will be suitable for all businesses *if* realistically minimum periods are to be set. I was interested to see that the suggested periods are in most cases quite long, and I am wondering just how much they were influenced by the fact that the documents in question were to be microfilmed. Surely space is only *one* factor in this business of document retention and full consideration must also be given to *ease of reference* by persons in the organization using the documents and also their efficient maintenance. I am not, of course, suggesting that microfilmed documents are not easily referred to, but limitations undoubtedly exist relative to the disposition of the 'readers'.

This question of ease of reference was probably well in the mind of a certain company who were delighted around Christmas time a few years ago to receive an order asking them to supply certain of their goods to a name and address specified on behalf of His Royal Highness the Duke of Gloucester. The order was duly executed. Exactly a year later they again received instructions from the Duke of Gloucester asking them to repeat the previous year's order. The General Manager asked their Filing Department to provide him with last year's order. It could not be found. The General Manager was worried—naturally. He was not at all anxious to have to write to His Royal Highness to ask him what they had supplied last year. He said the order must be found! Easy to say. It could not be found, and the General Manager decided he must handle this himself and he descended personally on the Filing Department. He interviewed and questioned everyone. He was talking to a rather junior member of the staff and said, 'Now do try and search your memory. It is very important. About a year ago an order was received from the Duke of Gloucester. Now can you recall seeing it?' To his amazement and delight she said, 'Oh, yes, sir.' Still feeling a little uncertain—but hopeful—the General Manager asked her to take him to it. She led the way down an avenue of filing cabinets and stopping at one she opened the second drawer down and in a few moments extracted a paper and handed it to him. He looked, and sure enough it was the order he wanted. He was naturally delighted and said to the girl, 'But where was it filed?' She looked at him almost pityingly and replied, 'Under "Public Houses", of course.'

The question of set periods for routine documents is, of course, a difficult one and I would once more emphasize the need for a *realistic* approach to the problem. Perhaps I may give you an example of a useful method of approach which, if used intelligently, can often point the way to setting-up maximum periods. At the beginning of the survey which I conducted I arranged for the preparation of a list of all documents retained in our Record Store, with details of dates on which items had been extracted from the particular groups during the preceding three years. I should be surprised, if you conducted a similar exercise in your own organizations, if you did not find, as I did, that this list of extractions was a very short one. I am confident that most companies keep masses of documents 'just in case'. In The Wellcome Foundation we were keeping them just in 3,580 cases. One class of documents common to a great number of businesses can, I think, be usefully highlighted—copy invoices and dispatch documents. In our case we produce about 2,000 of these documents every day and at the time of my survey they were kept for six years. I think you will find that this period of six years is a very common one. If you were to ask the organization concerned why they kept them for six years they would probably quote 'The Statute of Limitations'. If you examine that, as I did, I think you will find there is little basis for the argument. I am no lawyer, but I understand that the Statute of Limitations refers to the inability of persons to recover by legal action moneys owing under a contract if a period of six years has elapsed before the action is brought. My company, like most, I venture to say, does not wait for six years before claiming debts. Any item outstanding for more than a year at most is placed in the hands of our legal department, who at that stage require all documents relating to the transaction. So we find that all relevant documents have at that time been extracted from our files. Thus we, like so many other companies, were keeping the papers of all the 'good boys' so that we might still have in our possession the papers of the 'bad boys' when in fact they had already been extracted from our files a long time ago. It is interesting to know that there is only one legal requirement on the subject of keeping copy invoices for specified periods and that one refers to Purchase Tax. The Law says that copy invoices containing Purchase Tax items must be retained for inspection for a minimum period of two years. The apparent absence of legal requirement for periods of retention of all other documents does not, of course, mean that any company would be foolish enough to destroy documents immediately, but I would suggest that it is unlikely that many such routine documents are required for a period exceeding three years. In our own case we were able to reduce most periods of retention by half with a saving of 40 per cent space, 40 per cent equipment and 100 per cent labour—and 13½ tons of paper representing some 4,000,000 quarto documents were sent to salvage. If any of you are nervous about the possible legal complexities from such wholesale destruction, I can perhaps reassure you by saying that it is now three years since we carried out this operation and we have not so far had any single case of difficulty.

(*A film was then shown.*)

DISCUSSION

The Chair for the morning session was taken by MR. JOHN RYAN (The Metal Box Company Limited). When the meeting was thrown open for discussion MISS IDA DARLINGTON (London County Council Member's Library) asked what permanent records were kept of accounts and business transactions. Mr. Ivey said that they were very few indeed. Correspondence and various documents relating in particular to items of development within the Foundation, such as new associated houses, were preserved permanently. He felt that he should, perhaps, mention the records maintained by the Chemical and Biological manufacturing units relating to products issued. The Foundation enjoyed a very high reputation in the pharmaceutical field and the manufacturing staff were adamant about the period of time that the relevant documents must be retained because of possible inquiries which might arise. Apart from these, however, very few documents were kept permanently and he thought he could say, without exaggeration, that they occupied only three or four drawers in a filing cabinet.

Mr. B. C. Redwood (British Records Association) asked what was done about records produced by the Company Secretary, apart from the Minutes of the Board and documents of that kind.

Mr. Ivey said that the Minutes of the Board were quite outside his scope. The length of time for which leases and other legal documents should be kept could be determined by their life validity or some such criterion. But these also were rather specialized and outside the mass routine documents to which he had been referring.

Mr. R. H. Ellis (Historical Manuscripts Commission) asked whether there were private filing systems outside the central system. Were there departmental filing systems in different branches or did senior executives keep their own? Mr. Ivey replied that members of the Board had the opportunity of keeping certain papers in what might be called private and confidential files under lock and key, but these occupied a very small space. When documents were moved from executives' offices to the record store they were pruned as far as possible.

The Chairman said that he would like to follow up this point. In a large company like his own one of the great problems was not so much how to keep but what to keep. For instance, his own files, at the end of the year, would normally pass into the record department. They contained all sorts of things, varying from the trivial to the result, perhaps, of some very special matter. Who, apart from himself, could say what could be thrown away and what ought to be kept? He might want to refer to correspondence about seven years previously and might find that it had been destroyed, but he was not sure that even he could have forecast that it would be needed again. He doubted whether even a very good secretary could be instructed what to keep except on very general lines. It must be a real problem, at any rate in the correspondence of executives, to ensure that one did not throw away those comparatively rare items which might crop up again in ten years' time.

Mr. Ivey agreed that the setting of realistic periods of retention was obviously an extremely difficult problem. He recalled an instance of strong resistance by one of the managers with regard to documents which were being kept for seven years. The manager pointed out that he had had to refer recently to a document that was six years old. It was found that, in fact, this was the only occasion within the past three years on which such a document had been extracted from the file. The manager was asked what he would have done if the document had been *eight* years old? (It must be faced that, whatever period is laid down, something older may be wanted.) The manager said that he would have found a way round and admitted that it would not have been very difficult. On second thoughts he agreed that three years' retention was plenty long enough!

That was the kind of guide that one should have, though it could never fully answer the question. Executives had been asked to throw away papers filed in their offices after a reasonable period and to send any they wished to keep to the record store for the period laid down—say three years. It was up to them to extract and keep separately anything that might be required beyond that period, making separate arrangements for it.

To Mr. L. C. Johnson's (British Transport Commission) remark that the speaker's attention had been confined chiefly to ephemeral documents, Mr. Ivey agreed that his main concern had been with the mass of routine documents. They represented some 96 per cent of the total and they were the principal cause of difficulties. There were, of course, many other types of documents and he had paid some attention to them with—to be frank—comparatively little result. He was not, however, very worried, since they occupied such a small space of the total storage. The people concerned in the secretariat were satisfied that the periods they had set were reasonable though he, himself, thought that in many cases they were rather long. The important point was that everyone should examine the periods of retention from time to time to make sure that they were realistic and that they fitted in with current requirements.

MISS D. L. SAMUEL (Borax Consolidated Limited) said that with regard to technical information it was often necessary to look back thirty years to see what was going on in an industry. Would Mr. Ivey set a time limit for correspondence and records of that kind? MR. IVEY said he would not comment because the technical side was outside his scope.

MR. W. S. SAMUEL (Business Archives Council and British Records Association) said that, from his commercial experience, he knew that purchasing departments usually had an enormous card index of their suppliers, listed topographically, alphabetically and under subjects. Did that type of document also come in for Mr. Ivey's destructive attention? MR. IVEY replied that the buying department had such card indexes and they were carefully weeded from time to time.

DR. R. E. FAIRBAIRN (Imperial Chemical Industries Limited, Dyestuffs Division) raised two points. Correspondence files could contain both trivial material and letters which were worth keeping and even indexing, yet it was a tremendous job to go through them. Could Mr. Ivey give any advice? Secondly, what should be done with regard to reports and memoranda on meetings of committees, which were duplicated over and over on people's files when one or two copies kept centrally would be more than adequate for the use of the entire organization?

Replying, MR. IVEY said that in The Wellcome Foundation people were encouraged not to keep copies of 'thank you' letters at all. Certain other unimportant documents were kept for a short time until a reply was received and then went into the wastepaper basket. They did not go into the files at all. Secondly, when a document was circulated to a number of people and the question arose whether they would all file it, a note was put on the bottom saying that one copy would be filed by the secretariat or by whoever was responsible for issuing the document. People might keep a copy on their desks for a short time but ultimately it could be scrapped.

BUSINESS RECORDS FOR THE PURPOSE OF THE HISTORIAN

BY PROFESSOR J. W. BLAKE, M.A.

Department of History, University College of North Staffordshire

Second Conference on Business Records, London, 10th June 1958

MY function this morning is to say a word or two about what kind of business records it is desirable to keep for the purposes of the historian. This is, I suppose, marginal to the subject which we have already listened to this morning in that, while there is no general rule, in essence I am concerned with only those business records which—according to company regulations—are to be kept for at least six or ten years and not much, if at all, with routine or day-to-day records.

One of the difficulties is that of making a value judgment, and a value judgment is subjective and also relative. Opinion, even if it is professional—and I say it in this company with some trepidation—is after all only opinion and cannot be entirely objective. The value of a record is relative to its purpose: thus, a document may be valuable in a court of law or in a business transaction; yet the same document may have quite another value, more value or less, as an historical record. And this is true of all business records.

That would appear to raise such a problem as to make it impossible to discriminate between one kind of business record and another. Yet it is desirable that as far as possible business people should be able to make some sort of choice.

Mr. Ivey has already told us that the preservation of some kinds of business records can be important for business itself. It can also be important for the historian, the genealogist, the antiquarian, even for the collector, possibly a business man, who happens to have an eye for the rare, the unusual or the unique. There is even a commercial value for some kinds of business records if they can be kept and preserved for long enough. I am particularly concerned this morning from the point of view of the historian.

I recognize, as indeed all of you recognize, that it is all very well to say 'Try to keep records, try to select records, try to choose records, that ought to be kept for a long period rather than for a year or so'; but you have not really the time, however much you may have the will to co-operate.

As Mr. Ivey has very forcibly indicated, even if you have the time to devote to selection you probably have little or no physical accommodation—rooms or stores—for the keeping of old records, and microfilms, if a form of concentrated record storage, are costly. In addition, if you represent or personify a small business firm, you will certainly not have the kind of adequately heated and ventilated, fireproofed and damp-proofed accommodation that is essential to the proper and permanent preservation of old records. Therefore, if you want to do anything positive in this direction, you will be looking for practicable suggestions. I am to try to make some this morning.

I am deliberately aiming in what I have to say at small undertakings as well as at large commercial or business undertakings. For the small firm, particularly if it is a very old family concern, can often have very valuable records. Thus, the origins of banking, insurance and iron-manufacture—for example, the nail industry of south Staffordshire—are to be found in the records, where they exist, of tiny family undertakings. The vast combine, for example I.C.I., is a modern phenomenon, whose appearance has submerged the formerly more characteristic smaller units. It is only in a few branches of manufacture that the old family business has survived. An example in pottery manufacture is Twyfords Ltd. Twyfords was once a family business. It is now a limited company. The present secretary is a close friend of mine: I asked him where the records were. Apparently, the old records have disappeared. This is what happens so frequently when the family concern becomes the impersonal limited liability company. In other words, what I am really trying to interpolate here is this: do not conclude because your firm is small, perhaps no more than a tiny family affair, that it can have no records of value for the historian. On the contrary, the records of your firm, or some of those records, may already have or could come to have inestimable value for the future historian.

What can we do? First let me say that, impracticable though it is, in theory all records ought to be kept; and this for three good reasons.

1. The historical value of a particular record or body of records cannot be precisely assessed or forecast. Value judgments, if I may repeat myself, are relative. In this context value has to be assessed relative to hypothetical standards: the needs of the historian of the future. And how can we in 1958 forecast his needs? Where we have a mass of records bearing on a particular episode, the value of any *one* may not be great. But where we have no source material, the aid of even a tiny shaft of evidential light may prove to be infinite. The difficulty is in assessment, and prophetic assessment is clearly impossible.

2. New techniques in investigation can give new twists to the value of records; for instance, the current trend towards statistical evidence, which may give added weight to the value of personal records. We have an example in the recent work of Professor W. O. Aydelotte (State University of Iowa) on the House of Commons in the period of the Peel Ministry—'a statistical study', as he called it, 'of the slightly over 800 men who sat in the House of Commons between the general election of 1841 and the general election of 1847' (*History*, N.S., vol. 39, p. 249). In his attempt to explain politics, he needed all the information about the 'business interests and professional activities' of Members and their families that he could find. From such evidence as he had, he calculated that there were 123 definable business men in Peel's Parliament (cancelling out the overlaps, this total comprised 54 manufacturers, 64 merchants and 32 private bankers). This is relevant to the way the Industrial Revolution occurred in the nineteenth century.

In that very interesting document which the British Transport Commission have brought out relating to the Birmingham Canal Company, I notice that one of the substantial subscribers was J. Sneyd, who was able to subscribe one thousand pounds. He would have been regarded as a pure landed gentleman. He came from a very ancient gentry family in the west Midlands. Yet he is in that circle of Priestley, Wedgwood, Boulton and Watt who were the entrepreneurs of their age, and he is prepared to be a subscriber to the tune of one thousand pounds, no mean sum in the late eighteenth century and an interesting sidelight on the personnel of those times.

If more business records had survived, Professor Aydelotte could have been more confident of his results. He confesses, indeed, his failure to get all the information he needed. 'It is', he writes, 'more difficult than anyone who has not worked on a similar project would credit to assemble uniform and highly detailed information about 800 men who lived a century ago and many of whom were relatively obscure. . . . Almost no major source [of evidence] is free from error, the sources are not comparable . . . *and there are unexpected gaps which in some cases cannot be filled*' (page 252, my italics). It is not a long way back to 1847, and yet he finds in attempting a statistical investigation that this is actually the case. I think you will appreciate how he would have treasured the tiniest shred of evidence about family background or family business.

3. Records get destroyed however carefully and deliberately we seek to preserve them. Time—the insurance companies say act of God (and I think the Devil too)—may play strange tricks. Perhaps I may be permitted to recall some of the great occasions. One is the English Civil War. In my part of the country, the north-west Midlands, one of the most prominent families was the Sneyd family. They lost nearly all their personal records in the Civil War, because Keele Hall, where I now work, was ravaged. All the lead from the roof was melted down, and the Sneyd who lived in the Hall during the Restoration, writing to a member of the Chetwynd family, tells us that he lost all the family records when the Civil Wars occurred. It is an illustration of how much depends on whether you are a Cromwellian, or, like Miss C. V. Wedgwood, a Royalist, whether you think it is an act of God. But it is the sort of thing that happens.

Then there is the case of the Lisbon earthquake. Practically all the fine collection of commercial records relating to the whole of the vast trading empire of Portugal disappeared at that time. It was on All Saints' Day, 1st November 1755 that that happened. We shall never be able to replace that loss.

Another example—act of God, if you like—was the blowing up of the Four Courts in Dublin in June 1922 in 'the times of the troubles'. The whole of the old Dublin Record Office was almost completely destroyed. Rory O'Connor got inside and set up headquarters for the Republicans there. There were a few mines and the British artillery in Phoenix Park was directed on the Four Courts. Unfortunately, a shell hit a mine, and that was the end of all the records which had once been housed in Dublin. It was a terrible tragedy. There are fortunately some transcripts made by Irish historians before 1922, but the bulk of the administrative records disappeared.

If we look at this in perspective, as we must try to do if the past has any meaning, we cannot tell what the future may hold, and records adequately dispersed may in the end prove a surer safeguard against future hazards than even the most efficient concentration.

But clearly it doesn't help much, and it is no guide to say that we want to keep all records. Simple considerations of space make the ideal totally impracticable.

It will help much more if I suggest that you destroy no records without first consulting someone who knows about records, someone possibly from the Local County Record Office, a colleague from your local university, or a member of the British Records Association or the Historical Manuscripts Commission. There are, as you will know, organizations and their representatives who are generally very anxious to be helpful.

Mr. Ellis later this afternoon will tell you where you can deposit what you cannot keep and ought not to destroy. This, then, is the first rule. NEVER DESTROY WITHOUT PREVIOUS CONSULTATION. It may take a little time. It may be a little bother, but from my point of view as an historian it is justifiable to submit that as a good rule. NEVER DESTROY WITHOUT PREVIOUS CONSULTATION.

Now the second rule, endorsed nearly a quarter of a century ago in the original statement of aims of the Council for the Preservation of Business Archives, is to KEEP EVERYTHING THAT IS AT LEAST A CENTURY OLD. If a record has survived the vicissitudes of a century, it will almost certainly have acquired historical value; and there will almost certainly be historians somewhere who would gloat over it, turn it over expectantly, handle it gingerly, with awe, love and respect, and use it in some new way to prove some new and unorthodox thesis! If I may quote one example of a chance survival, there is a most remarkable collection of account books and other records relating to the Liverpool Slave Trade, roughly between 1750 and 1790. Only by good fortune did they survive. But no study of this subject, at any rate for the second half of the eighteenth century, could now be complete which did not include materials extracted from the Davies Davenport Account Books, now included in the Raymond Richards MSS. Collection in the Library of the University College of North Staffordshire.

The last and golden rule is to KNOW ABOUT BUSINESS RECORDS, to be familiar with them, to have a feeling for them, and, above all, *to be able to discriminate between them*. Knowledge and experience must be your guides. It may take years of practice to be able to recognize what an historian or records officer would call a valuable MS.—I mean from the point of view of an historian. But there are also those—a select few—who have a sort of hunch about records, a kind of imaginative or intuitive instinct which allows them to sift the wheat from the chaff. This is what I want to emphasize now, the sifting of the wheat from the chaff, or the gift of discrimination.

Now, business records, as you know much better than I, are manifold and diverse; they range from great leather-bound ledgers to tiny receipt fragments. I suppose we may allow them some sort of classification. This is desirable if we want to know what to keep and what to destroy.

1. Account books of all kinds; day-to-day accounts; wage and salary bills; monthly accounts; quarterly accounts; personal, private and public accounts.
2. Minutes of Court Meetings, annual or quarterly (Mr. Ivey very carefully excluded them from his discussion as to what records you could destroy), and the Minutes of Committee meetings.
3. Papers and reports pertaining to the Annual General Meeting of a firm; records, that is, which correspond to the papers that precede the production of Cabinet Conclusions or the production of a Memorandum which a Minister of Her Majesty's Government is going to present to the Cabinet. There are similar papers which precede the preparation of the Secretary's Report. Then

there are printed Reports relating to the Annual General Meeting, the Annual Balance Sheet, Income and Expenditure Accounts, Reports of the Secretary and the Treasurer.

4. Correspondence at all levels, public and private.
5. Deeds and Titles to Property.
6. Maps, sketch-plans and architects' papers or designs.
7. Trading records, reports, accounts, whether from home or overseas agents relating to such matters as trading methods, manufacturing techniques—Mr. Ivey referred to one category in an elaborate scientific organization such as a big firm engages in—prospects, or the state of the market, the political implications or the reflection of changes abroad on a foreign market.
8. The miscellanea of a manufacturing or trading concern, a public or private firm or a family business.

It would be a little stupid and certainly presumptuous on my part to dogmatize on the value for the historian of these different classes of records. Their value is likely to prove relative to (*i*) the amount of detailed information they happen to have (and this, as anyone who has had to use War Diaries will know, is often more of a testimony to the person who makes the record than to the institution or undertaking requiring it. This is as true of business records as of any other kind of record. You cannot eliminate the element of personality.), and (*ii*) similar information from other sources which after the lapse of time chances to survive.

Clearly in 1958 you cannot know what will survive the vicissitudes of the next century and therefore be available in 2058!

I think my point will emerge more clearly if once again I choose some concrete examples from random experience. By doing so, I hope to help you in the difficult choice of what to discard and what to keep. Let us take as an example

1. The Company of Royal Adventurers trading to Africa, a very old company. There are almost no official records dated prior to 1660, unlike the Hudson's Bay Company. I think Miss Johnson, the Archivist of the Hudson's Bay Company, is here; and it is very easy to work on those records because there are plenty of them; they happened to survive. That is not the case with the various companies which in sequence have been for many generations responsible for trade with West Africa or the whole of Africa as far as they were concerned, that is, with the coast from Cape Bojador to the Cape of Good Hope. No official records survive prior to the Restoration. But Minutes of the General Court and of the Court of Assistants (i.e. Directors) (and the Minutes of some of the sub-committees, e.g. the Committee of Accounts) do survive for the years after 1660. We can build up the post-Restoration history from the Minutes. Indeed, Dr. K. G. Davies has done this recently in his *Royal African Company* (1957). But we have very little evidence surviving from earlier days. Yet English trade with West Africa has its origins in the sixteenth century; there are suggestive fragments to indicate an elaborate company organization after 1620 and, I suspect, the pattern of trading activity, on which the wealth of England in the eighteenth century was largely based, was set in the elusive years 1635–55. But we do not *know*! The moral is to keep Minutes. Never destroy company Minutes, Minutes of the annual general meeting, Minutes of

the quarterly meetings. It is crucial from the point of view of the historian that that kind of record should be preserved. We would dearly love any kind of record from the earlier period, especially the age of Charles I and Cromwell. The moral of that surely is that any kind of record, even the personal memoranda of a minor clerk, if it is very old, may turn out to be of great, perhaps priceless, value.

2. Another example is the records of pottery manufacturers. Here is an area of activity where the family business still predominates. We know much, and economic historians will for ever be grateful for the care with which such families as the Wedgwoods have looked after their records over the centuries. But what we know today about pottery manufacture in the eighteenth century only serves to pinpoint what we do *not* know. We would like to know how certain less well-known families really fitted into the picture. Do the fine survivals of certain family collections unduly bias our present picture, giving these particular families undue weight and influence? You want, you see, the preservation of a *just* selection of records. Wherever that can be done, it is desirable.

We do not want the burden to fall on a few distinguished enthusiasts. We would like everybody to co-operate, preserving what is important, discarding incidentals. It is almost inevitable otherwise that the future historian will produce a one-sided or biased account of the past. This will be particularly so if he happens to choose his topic in the light of the preservation of a particular class of records—allows the record to determine his topic where he should determine his topic before he even knows what kind of records he is going to come across. The historian has free will, and like all humans he has his weaknesses. He is apt to allow those records which survive to determine his topic or the treatment of his topic. The business community could prevent him from that guile and deceit. If you want objective historians, it is up to business men to see that the records are preserved.

3. The Annual Reports of Companies (presented at Annual General Meetings and generally drafted by Company Secretaries) are also extremely important. One would hope that that class of record would be preserved wherever possible. When I was working on all kinds of records, business records, government files, company files, I found this. As you probably know, a particular person writes in, in wartime particularly, complaining about some regulation and a file starts. The matter goes on for two days and is settled and the file is closed and carefully put away. There it stands for all time. Others are tremendously bulky and as far as I could ascertain it is only rarely that the registries have time to bring together all these massive and diverse files into one central organization.

I found when I was writing the Official War History for the Northern Ireland Government that you could learn a great deal about what had happened by studying the annual reports of manufacturing and trading concerns when you were trying to study the commercial history of the country, particularly in time of war. Thus, I learned from the printed Company Reports of Harland and Wolff and of Short Brothers and Harland. They were very valuable because they always told the facts of production, how many ships, how many planes, and so on. From company reports we learn what is done, but we do not find out *why*, by whom initiated, and by whom carried on. Motivation and personal initiative are generally lacking. This is a good instance from many points of view.

Modesty will by custom prevent the name of *the* director or designer from being identified with a project, innovation or what-have-you in the annual report. The motivation cannot often be stated in the published report: too many important interests may be prejudiced. You as business men know this much better than I do. The report is valuable. As you will preserve the Annual Balance Sheet, so also please keep the Annual Report. But recollect, too, that this report may prove to be no more than a starting-point for a further investigation. And in the case of small family businesses, where the healthy conditions of keen competition and rivalry are likely to prevail, motivation is likely to prove extremely elusive.

What may we learn from all this in our attempt to distinguish between records to be preserved and records to be destroyed? Clearly, there is no general rule. But to alleviate the problem of space shortage we can get close to some working rules. The example of the Africa Merchants does, I think, demonstrate beyond question that we do want the Minutes, the Annual Reports, the Balance Sheet and so on of the Annual General Meeting preserved. We want, too, as exemplified in the case of wartime production, the personal memoranda, the 'very private and confidential' correspondence at the top level which relates to high-policy decisions, invention, expansion, government relations, as in wartime improvization. The Chairman indicated the situation in wartime. We want information on wartime controls. We want correspondence at top level relating to policy decisions and the growth of the firm or its experiences in emergency circumstances. High-level correspondence, particularly private correspondence, is very valuable for the historian when he is trying to read between the lines, when the printed report is not adequate for him and he is looking for motivation and personal responsibility.

If we can have these, we can know that the future historian will be able to lay bare the bones of an old and interesting story. We also want the record of the small family business as well as that of the large combine; for historians are particularly interested in origins, concerned, as they must be, with cause and effect. Then again, I have not exemplified here but it is self-evident that the historian badly needs the plan, the map, the design, records of property holdings, title deeds and so on. A title deed, even when it has no longer legal validity, may yet be of value to the historian in seeking to trace the history of a piece of property. You will all know how the landed families in this country were tremendously careful to keep their title deeds. Those title deeds have in many cases fortunately passed into the hands of permanent depositories, record offices. They no longer have any legal value. They do not provide a title. But they are of very great value for the historian. So the title deed, the record of property-holding, whatever form it takes, is very valuable. Here your care will gratify not so much the economic historian but rather the local historian, the genealogist, the antiquarian. It is, I suppose, true that your efforts to preserve will principally make you the creditor of the economic historian. But we do not forget the interest, too, of the local historian and the general historian. As in the case of Professor Aydelotte's investigation to which

I earlier referred, even wide political issues may be illuminated by the chance preservation of business records. If, in addition, the odd and amusing tale or anecdote should also survive, the historian may also hope to give life to his story—it is dull enough anyhow—as the historians of businesses, amateur perhaps more successfully than professional, have shown us. The amusing anecdote may throw a lot of light on character, and after all personality is enormously important, even in the day of the huge commercial combine.

In conclusion, I would urge that you should learn about records; get the feel of them; fertilize your intuitive powers, your powers of imagination. Try to look into the future. View 1958 from the horizon, if you can, of 2058. With this advice, when you are trying to decide what to keep and what to discard, you will not go far wrong. Certainly, if you follow that advice—if I may say this in the presence of a number of record officers—you as business men will make few more mistakes than the professional archivist.

DISCUSSION

MR. J. A. AYTOUN-ELLIS said he happened to be a writer, and one who had been responsible for the histories of a number of firms and institutions. He was very interested in Professor Blake's remark about 'having a hunch' about the possibility of routine documents of today having historical interest in a hundred years' time. It was a tremendous strain on the imagination to believe that, yet over and over again in his researches the trivial had provided the biggest clue.

To give an example: he had written the history of a banking house, the records of which had been preserved from the very beginning, from 1800 onwards. Confidential letters between partners here and in America, impressed copies and the like, had survived. They were not all legible; in fact quite a number were extremely difficult to decipher. But none of the ordinary routine letters and documents of the bank during those 150 years had been preserved. Out of the blue from a firm of City solicitors had come a letter dated 1860 found among their old papers. The bank was sending to a lady in Brighton £25 in five £5 notes. It was in the days when there were no envelopes and when even the registered post was extremely unreliable, so they had enclosed, as was the apparent custom, five halves of the £5 notes and awaited acknowledgment before sending the other five halves. It was a perfectly simple routine letter of one hundred years ago, and yet it was of tremendous interest to the historian today, and that example could be multiplied over and over again.

Concerning Professor Blake's reference to Company Reports, he said that in the early days of joint stock companies more than a hundred years ago, companies' Annual Reports and Minute Books were extremely detailed and informative. Nowadays directors were increasingly guarded about what they said and—from the historian's point of view—they said as little as possible. Not only in banking but in many great commercial houses the way they presented these reports in the briefest fashion possible was one of the great triumphs of the secretarial departments of the firms concerned, but this was no great help to the historian of the future.

PROFESSOR BLAKE said that he agreed. It was true that one could not know that a record would be of value in one hundred or two hundred years' time, but if it was unusual, informative or amusing it might have, by the accident of time, very great value. There were not many people who had a 'hunch' though there were some. It was something to do with getting into the habit of mind of thinking, 'Yes, this might be of real interest to someone' instead of 'It's absolutely no good to us; let's throw all this away.' The natural collector was that kind of person and fortunately there were many business men like that.

DR. R. M. HARTWELL (Nuffield College, Oxford) said that the way to ensure the preservation of business records was to convince business men that there was some value in history. But an historian would *not* necessarily convince business men that they should preserve documents by saying they would be useful to historians in a hundred years' time.

The trouble was that business records were so bulky that it would be impossible to preserve anything like all of them. However, whereas in the past some business records had been preserved haphazardly, there was today systematic destruction. Historians might complain that there was insufficient knowledge of the Staffordshire potters in the eighteenth century, but there was some knowledge; e.g. about Wedgwood. Similarly, there was some knowledge about industrialists in most industries of the eighteenth and nineteenth centuries. Today, however, there was a danger that, with the habit of systematic destruction—as described that morning—most business records would be destroyed. Therefore it was necessary to convince business men that there was some use for business records, and that there was a need for a compromise solution on preservation which would suit both business men and the historian.

There were some uses of business records besides those of current administration. One had only to look at the spate of business history literature that had been written in this country and in the United States to realize that a large number of business firms were convinced that business history was a good thing; that it was, if nothing else, a vindication of business, an answer to the criticism in most parts of the world of business, and of what business men had and had not done.

It could be argued also that any institution, particularly a large one, had responsibilities to the future. One of the strengths of British society was its interest in its past, and one hoped that business enterprises—both large and small—would continue to preserve some of their records so that future historians would know how business was conducted in the mid-twentieth century.

PROFESSOR BLAKE said that these comments were sound. One could adopt Henry Ford's attitude that 'history is bunk'. But it was a sensible attitude for any citizen of the Commonwealth to be concerned with the future, and therefore he must be concerned essentially with understanding his own society, for the future would be determined by the present. What society was like now had been determined by what had happened in the past and existing society was largely conditioned by commercial and business organizations, for it was an industrial society. In this sense, the more one could know about the business and commercial conditions that had framed society, the more one would be able to understand it.

Professor Blake said that he was not thinking so much in terms of individual business histories, although these were a component, as of getting a picture of the whole. In addition there were innumerable instances where reference back could prevent a firm or firms, or even a government institution, confronted with sudden emergencies, from making mistakes or overlooking particular factors. The main point was that while one must look forward, one would usually look forward wrongly unless one had also looked back. This was the fundamental case for the study of business history and therefore the case for the preservation of business records.

MR. R. F. MAURICE (National Union of Manufacturers Advisory Service Limited) said he would like to draw a distinction between the older records and other records. The historical records referred to related to a time when the present industrial society was growing up. They were unique records, original documents, records of events which were not recorded elsewhere. In this country today, however, there were some 150,000 manufacturing establishments—who would ever find time in the future to examine their records selectively? Was not history being written contemporaneously? Was there not sufficient information for future historians in the mass of current published material?—as for instance *The Times Review of Industry, The Financial Times,* the *Economist* and many other publications whose reports and comments on the current industrial scene often attributed motives which were not found in the records of businesses themselves.

He did not quarrel with the need to preserve older records, but he wondered how much the need to preserve current records might not be exaggerated. Even legal documents and titles to land were commented on in the professional Press in so far as they reflected trends in legal thought and changes in procedure.

PROFESSOR BLAKE said that it was certainly true that with modern methods of printing and duplication a mass of records was produced every moment of the day. On the other hand, the extent of the destruction of old records was staggering and one must assume that the danger of an equal destruction of modern records was very great. The very fact that so much was being produced would surely accentuate the desire to deposit it in the wastepaper basket or burn it!

It was essential to get the perspective right, to look at periods of fifty years rather than at two or five or seven years. The industrial organization of this country had changed very considerably, even in the last fifty years. It might well change in some other way in the next fifty years, and the ultimate explanation of change was often to be found not so much in the reports of *The Times* industrial correspondent as in the inner record sanctuaries of particular firms. Here would be found the real germ of change, not necessarily progress, but at any rate evolution in industrial organization. There was undoubtedly a case for preserving significant policy-making documents, records of general meetings and so on.

MR. V. A. WOODMAN (Gloucester City Library) said that lack of space was perhaps one reason why records were committed to the fire. Perhaps some firms might be persuaded to put their records on microfilms.

He might be introducing a discordant note, but as a public librarian he found historians did not always use documents with the respect they deserved.

PROFESSOR BLAKE said on the first point that this was probably a valuable method of preserving records. On the second point, if librarians and record keepers would microfilm originals the historian could be given the microfilm and need never touch the original.

There was a dilemma here. One preserved records not simply because one wanted to preserve them but in order in the last resort that they might be used. That was the case for preservation; the historian should not be careless; but he must be able to use them, for otherwise there was no point in keeping them.

MR. C. E. C. HEWETSON (H. J. Heinz & Company Limited) pointed out that Mr. Ivey had emphasized the history of the business concern but Professor Blake had referred to the Slave Trade, evidence of which was contained in company documents. Would there not be a tendency with Mr. Ivey's type of weeding out for documents concerning the history of the company as a corporate body to be kept, little or no attention being given to the activities of the individuals within it? It might as well be admitted that in one hundred years' time Mr. Ivey himself might be the subject of an historical investigation in connection with his own activities!

Did Professor Blake think anything could be done to preserve these internal pieces of history which would contribute little to the history of the organization as a whole but would be of great interest in a limited field outside the organization?

PROFESSOR BLAKE said he thought sufficient records should be kept to enable the historian dealing with a wider topic, say the development of steel in this country as a whole, to use individual records of individual steel companies or of the State if the steel industry was nationalized. He would also want to use sources that were not quite primary but secondary, such as newspaper accounts. In these days, too, industry had increasing contacts with Governments, and a properly trained and equipped historian should be able to produce a coherent broad story from lots of little individual analyses.

DR. P. R. E. LEWKOWITSCH said she would like to keep a guardbook of labels on bottles as a most interesting study of the development of printing and styles of advertising on labels, and also letters from members of firms who were temporarily in the Forces. Would these be regarded as ephemeral? One hoped one had a flair for finding what was useful, but one was often accused of being merely a hoarder.

As for documents and memoranda relating to policy, as often as not one was told to burn them, as it was not desirable that they should be seen by anyone.

PROFESSOR BLAKE said there were always people who were interested in the collection of labels and such items. They acquired commercial value and were apt to be preserved by someone.

The reluctance of business men to disclose confidential records was a very old problem, and it arose also in the matter of family records, and some government departments had good and proper reasons for not making documents available. It must be assumed that the historian was a discreet person. Official historians were certainly apt to be discreet. But with the passage of time the difficulty about the use of confidential records tended to disappear, and if these vital policy-making records were kept the time would come when they would be of infinite value.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

ASLIB CALENDAR

OCTOBER

WEDNESDAY 8th. Scottish Branch visit to Messrs. Dunn & Wilson, Falkirk. See paragraph below.

TUESDAY 14th. Furniture and Textile Groups conference.

WEDNESDAY 22nd. Electronics Group General Meeting. See paragraph below.

NOVEMBER

THURSDAY 27th–FRIDAY 28th. Northern Branch conference at Sheffield.

DECEMBER

TUESDAY 2nd. Midlands Branch meeting. See paragraph below.

1959

JANUARY

WEDNESDAY 21st. Midlands Branch meeting. See paragraph below.

MARCH

WEDNESDAY 25th. Midlands Branch Annual General Meeting. See paragraph below.

Midlands Branch

The winter programme of the Branch includes a number of evening meetings to be held in the Engineering Centre, Stephenson Place, Birmingham. The first of these will take place in October and the speaker will be Mr. R. Sewell, Information Officer, United Steel Companies, who will tell members about his visit to the U.S.S.R. On Tuesday 2nd December there will be a joint meeting with the Midlands Presentation of Technical Information Group, to consider technical publications in industry. On Wednesday 21st January 1959 Mr. P. Auger, Technical Librarian, Joseph Lucas (Gas Turbine Equipment), will speak on the impact of automation on special libraries. The Annual General Meeting will be held on Wednesday 25th March, when Mr. L. L. Ardern, Librarian, Manchester College of Science and Technology, has accepted an invitation to speak on microtechniques in libraries. Further details of the October meeting should be obtained from the Branch Secretary, Mr. E. H. C. Driver, College Library, Birmingham College of Technology, Gosta Green, Birmingham 4.

Scottish Branch

The Branch visit to the bindery of Messrs. Dunn & Wilson, Falkirk, on Wednesday 8th October will start with a cup of tea at 2.30 p.m. It is expected that the tour of the bindery will occupy about two hours, from 3 to 5 p.m., and members will be able to see, step by step, how books are bound for their preservation and practical use. Mr. Dunn has kindly arranged to provide further refreshment for members after the tour.

Electronics Group

The first General Meeting of the Group will be held at 2.30 p.m. on Wednesday 22nd October at 3 Belgrave Square, London, S.W.1. The speakers will be Mr. S. Whelan, B.SC., Royal Radar Establishment, Malvern, on the RRE pilot retrieval system; and Dr. A. D. Booth, Head of the Department of Numerical Automation, Birkbeck College, London, on general aspects of machine translation and possible applications in the field of library information classification and retrieval. Other activities of the Electronics Group include preparation of a guide to specialized year books and reference books, schemes for a Union List of journals and for the disposal of surplus journals, and a week-end conference in May 1959. A survey of the extent and adequacy of published abstracts relating to the field of electronics is also to be undertaken.

Further particulars of all these activities can be obtained from the Group Secretary, Mr. N. E. C. Isotta, Ministry of Supply, TIL 2, First Avenue House, High Holborn, London, W.C.1.

Aslib Year Book 1958–1959

The *Aslib Year Book* 1958–1959 is now ready and in course of distribution to those who have placed standing orders. It is a thicker volume than last year, and this is mainly accounted for by the ever-increasing list of members reflecting Aslib's expanding range of activities. It is bound in a semi-stiff cover of good quality linen in a soft shade of turquoise blue. The price is 12*s.* 6*d.* to members of Aslib, 18*s.* to non-members. Orders should be addressed to the Publications Department, Aslib, 3 Belgrave Square, London, S.W.1.

Patent Office Periodical List

The Patent Office Library has recently issued a second edition of its current periodical holdings. The Library has a world-wide collection of scientific and technical periodicals as well as patent specifications and journals. The 258-page list gives titles, first dates, and locations in the library of over 6,000 current periodicals. It can be obtained, price 12*s.* 6*d.*, from Her Majesty's Stationery Office, York House, Kingsway, London, W.C.2, and at the sales branch counter of the Patent Office, or through any bookseller.

Patent Office Printing Arrears

It is stated that good progress has continued since the last report was issued. The arrear of abridgement sheets has been completely cleared and bound volumes of indexes, both subject and name, are almost complete for the series beginning no.740,001. Part of the material for the next series is printed, and that for the series commencing no.780,001 is in preparation.

Instrument Inquiry Service

A new service, dealing primarily with 'where to buy' inquiries concerned with British instruments, components, and accessories, has recently come into being as a result of an agreement between the Scientific Instrument Manufacturers Association (S.I.M.A.), the trade association of the instrument industry, and the British Scientific Instrument Research Association ('Sira').

It is to be known as S.I.M.A. Instrument Inquiry Service and is housed in the Information Department building at 'Sira', South Hill, Chislehurst, Kent. Telephone: Imperial 6000.

College of Production Technology

A three-day course on materials handling will be held from Tuesday 16th to Thursday 18th December inclusive at the College of Preceptors, London. It will be organized by the Department of Industrial Management of the College of Production Management and will combine method study, mechanical handling, and human relations. The Department is also to hold a series of three-day conferences on work study and human relations in industry in Birmingham from 20th to 22nd October, in London from 27th to 29th October, and in Manchester from 3rd to 5th November. Further details of both the course and the conferences will be sent on application to The Registrar, Department of Industrial Management, College of Production Technology, Great Chart, Ashford, Kent. Telephone Ashford 506.

Special Libraries Association Scholarships

The Special Libraries Association offers four scholarships of $1,000 each for the academic year 1959–60, to be used for graduate study in librarianship leading to a degree at an accredited library school. The scholarships are available to graduates and senior students with experience in a special library or wishing to enter the special library profession. Detailed conditions of application may be obtained from the Executive Secretary, Special Libraries Association, 31 East 10th Street, New York 3, New York, U.S.A. Completed applications must reach the Chairman of the Scholarship and Student Loan Fund Committee, Special Libraries Association, not later than 1st March 1959.

More Grants for Library Research

The Council on Library Resources has made two further grants for library research. The first is to the International Federation of Library Associations and is to be used for investigating the possibility of international co-ordination of cataloguing codes. Revision of existing codes has been started in a number of countries, including Great Britain, France, Germany, Italy, and the United States, and in most cases it is being carried out on similar lines. The present time seems, therefore, opportune for establishing an international system which should lead to better bibliographies and considerable economies in library and bibliographical services. The major part of the work will be undertaken by Ifla's working group on cataloguing. The chairman of the group is Mr. F. C. Francis, C.B., M.A., F.S.A., President of Aslib.

The second grant is of $16,131 to the United States Book Exchange, a private organization which serves as a centre for exchange of surplus books and periodicals, similar to the British National Book Centre. Since 1948 the Exchange has been housed at the Library of Congress, but before March 1959 it has to find other premises. In order to effect the necessary economies the Exchange intends first to carry out a full investigation of its own operation, and the grant has been made for this purpose.

MEMBERS' ADVERTISEMENTS

MANUSCRIPTS—books, theses, articles—typed with affectionate care. Research intelligently prepared. American and English only. Work called for and delivered within reasonable distance. B. M. Collins, 77 Walm Lane, Willesden Green, London, N.W.2.

TRANSLATIONS. Technical and Commercial, from German and French, promptly executed by experienced man (on Aslib register of specialist translators). H. B. Andrews, F.R.S.A., F.I.L., 43 Wansunt Road, Bexley, Kent. Bexleyheath 3071.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

ASLIB proposes to institute a programme of research into problems affecting the communication and use of specialized information with particular reference to special libraries and technical information services. Applications are now invited for a new post of HEAD OF RESEARCH to formulate and conduct an appropriate research programme and establish a small research department. Preference will be given to candidates with a degree in some branch of science or technology, experience in technical information work or research experience in industry or the academic world. Salary scale £2,000 × £75—£2,500 p.a., plus superannuation benefits. Applications, naming two referees, to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

CHARTERED LIBRARIAN required to develop technical library in large iron and steel works and organize abstracting service; previous experience in technical library an advantage. Salary in accordance with qualifications and experience. Superannuation fund. Consett Iron Company Limited, Consett, Co. Durham.

INFORMATION OFFICER/LIBRARIAN. R. B. PULLIN & CO. LIMITED are expanding their Development Department and invite applications for the post of Information Officer/Librarian. The Librarian will be responsible for establishing a technical library, for liaison with other libraries and for the dissemination of technical information within the Company. Candidates should have a science degree or equivalent with some technical experience, preferably in light electrical engineering. A knowledge of German would be an advantage. This is a new appointment in an expanding organization. Salary according to qualifications. Contributory pension scheme and five-day week. The Development Department occupies new air-conditioned premises with excellent working conditions and facilities. Apply, giving details of age, experience and qualifications, quoting D.D. 14, to The Personnel Manager, Phoenix Works, Great West Road, Brentford, Middlesex.

TECHNICAL INFORMATION OFFICERS are required by the United Kingdom Atomic Energy Authority, Industrial Group Headquarters, in its Research and Development Branch at Risley, Warrington, Lancashire. Their duties will include the selection of technical data (mainly from unpublished sources and initially on the rarer metals), compilation of data-manuals and bibliographies, abstractions and subject-classification of materials by U.D.C. and answering enquiries on a wide range of scientific and technical subjects. A G.C.E. or equivalent in at least five subjects, including two at Advanced Level in science or mathematics and experience in the duties described are essential. A university degree would be an advantage. Salary between £990 and £1,215 or £395 (at age 18) and £855, according to qualifications and experience. Contributory Pension Scheme. Housing or assistance towards legal expenses on house purchase may be available. Send postcard for application form, quoting reference 2596, to Recruitment Officer at above address. Closing date: 29th September 1958.

WIGGINS TEAPE GROUP RESEARCH ORGANISATION, Butler's Court, Beaconsfield, Bucks. Junior Library Assistant required for small technical library and information service (approved by L.A.). Previous experience desirable but not essential. Salary in accordance with age and experience. Lunch vouchers given. Applications to the Librarian.

Young woman assistant required by the BRITISH ELECTRICAL DEVELOPMENT ASSOCIATION in their Information Library. Applicant should be a proficient typist and have good working knowledge of indexing and filing. Some library experience an advantage. Salary according to qualifications and experience. Superannuation scheme in operation; staff restaurant. Applications should be sent to the Director, B.E.D.A., 2 Savoy Hill, London, W.C.2.

Situation wanted

TECHNICAL LIBRARIAN, 29, seeks post in London area. Wide experience of industrial information work and bibliography. Mrs. K. Bourton, 12 Mount Park Crescent, Ealing, London, W.5.

Book wanted

German-English Dictionary for Electronic Engineers and Physicists by Regen and Regen, new or secondhand. Andrews, 43 Wansunt Road, Bexley, Kent.

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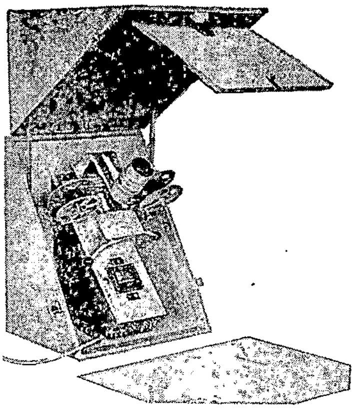

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 10 **October 1958** **Number 10**

CALCUTTA UNIV. CENTRAL LIBRARY

PRESERVATION OF RECORDS: STAFFING, STORAGE AND COSTS

BY S. A. TASKER

O. & M. Specialist, Organization and Methods Department, Unilever Limited

Second Conference on Business Records, London, 10th June 1958

WE have heard from the two previous speakers* about the records which should be kept for business purposes and for the historian. I should now like to say a few words about the approach of an O and M Department in a large business to the problem of preserving current records in general.

In most businesses the question of which records to retain or destroy is usually decided on practical grounds, such as the likelihood of reference, the cost of retention and the amount of space available. As far as I can ascertain, the question is rarely considered with the historian or student in mind. I must confess that I have never given much thought to their needs in this respect. I am inclined to think this is particularly true of a large business, especially if the original family connection is gone, where decisions of this kind are the responsibility of departmental managers, who are not concerned with running the business as a whole.

In spite of this, I do not think the historian need suffer very much, as his requirements appear to me to coincide with ours. For example, in Unilever we are producing something like sixteen million sales invoices a year—happily, not all in one place. These invoices and similar routine documents which form the bulk such as sales orders, purchase orders, purchase invoices and so on are the records we should wish to dispose of as quickly as possible as they occupy an enormous amount of space, while at the same time the likelihood of reference to them after a year, or sometimes even a few months, is small.

It is extremely unlikely that this vast number of routine documents would be of much interest to the historian. He certainly would not have time to read even one year's output. It is far more likely that other records produced from them, such as reports, analyses and statistical statements, would be of greater value as they would present him with summarised information and it is this type of record which we should be inclined to keep for a longer period. Whether we should be likely to keep them long enough may be doubtful but it is certain that the important records which we retain permanently, such as stock and share records, minutes of Directors' meetings, deeds, agreements, company accounts, estate plans, policy documents, Directors' correspondence and others of that kind are those which would be of the greatest value to the historian. Another source of information, which is already widely circulated, is the annual statement to the shareholders. There is a tendency to include in it these days more and more news of developments likely to be of interest to the historian.

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* The papers by E. W. Ivey and Professor J. W. Blake appeared in *Aslib Proceedings* for September 1958.

As is well known, office space is costly today and is an important factor in the economics of document storage. We in Organisation and Methods naturally regard it as undesirable to use more of it to accommodate records than is necessary. As a point of interest we discovered recently that in a group of buildings about 8 per cent of all available office space was taken up by records. In our headquarters we have some basement space which is unsuitable for offices but adequate for document storage. This, of course, costs much less than office space and our Central Filing Department is situated there. It is fairly extensive and accessible and we encourage the removal of records there from offices as soon as possible so as to reduce storage costs. In addition to this there are, as I see it, three other ways of reducing costs. These are:

1. To reduce the number of records that are created in the first place.
2. To destroy unwanted records as soon as possible.
3. To use filing equipment which is economical of space.

I should like to say a few words about all four.

Reducing the number of records which are created

This is in itself a very big subject, embracing, as it does, many aspects of organization and methods work, and its importance cannot, in my view, be overemphasized. The principal advantages to be gained are not so much in reducing the volume of paper to be handled, although this is most relevant to our subject today perhaps, but in reducing clerical operations.

Let us consider a few examples of what sometimes happens.

Firstly, with the present tendency towards increased sub-division of office work, it is not uncommon to find several copies of the same document created for different purposes. Consider our invoices; unless we are careful our sixteen million might become sixty million if the sales, accounts, statistics and despatch departments all decided to keep a copy. This is truly a frightening thought when considered on this scale. Our suggestion to remedy this was not made solely to ease the filing problem but this has become an important by-product of it. We have tried, wherever possible, to reverse the policy of sub-division and have combined the functions of sales, ledgers and statistics in the same individuals, making one invoice suffice where three would have been necessary. Having reduced the number of copies for operational purposes from four to two the next thing to decide is whether both need be filed or whether in fact one may be disposed of.

Secondly, here is an example in which not only extra paper is created but extra operations as well. What is more it is, in my experience, quite a common failing. I have seen a number of sales departments with representatives making regular calls on customers. The first record to be created is an order form, usually in duplicate or triplicate. The representative keeps one copy and sends the remainder to the office where one may be used for normal sales routine and one possibly for sales promotion statistics. In the sales routine office an entry is made on a customer's record card and it is not unknown for another to be made in the sales promotion department. A dispatch order on the factory or depot next follows, with copies to everybody remotely concerned—accounts, dispatch, stock control and so on. This is followed by an invoice with copies to accounts department, statistics department, the representatives and possibly others. Finally, a sales ledger account is posted, making in all something like six records, six operations and about fifteen–twenty pieces of paper.

At the risk of over-simplifying, I would say the basic needs are:

1. A representative's order.
2. A combined invoice and dispatch set.

The order can often be a dual-purpose record, being also a customer's record card to be sent to the representative before he makes his call. The dispatch and invoice set can be reduced by combining functions as already explained. Frequently, the copy used as the advice of dispatch from the factory or depot is also used as a ledger record by filing it as 'outstanding' until payment is made. In this way no separate ledger record is created. We have now only two records comprising five or six pieces of paper. I know that requirements vary in different types of business and that it may not always be possible to simplify to this extent, but in the right conditions it is quite practicable.

For the final example let us consider a centralized service, such as a statistical department, or a library, producing surveys or reports and circulating them on a fairly wide scale. This could result in the same document being filed in fifty or a hundred different places. Each recipient, when consigning his copies to central storage, probably does not stop to consider the over-all effect. Even if he did so he would probably decide that it did not amount to much. However, when multiplied fifty or a hundredfold it does amount to much. To overcome this we try to encourage recipients to destroy their own copies as soon as possible by publicising the fact that the originating department will always keep copies for later reference.

Destroying unwanted records as soon as possible

This is surprisingly difficult. It sounds commonsense and most office managers, if asked, would say they agreed. But do they practise it? It is quite common to find such things as covering notes and copies of acknowledgments kept on files for months and sometimes years, when they have no real value after a few days. This particular fault is easy to spot and it is comparatively easy to persuade office managers to rectify it once it has been pin-pointed. With other types of records, it may be quite a different matter. In a business such as ours, composed of a number of varied units—production, selling, advisory and service—it has not been found practicable to lay down from the centre precise instructions governing the retention of documents. Nevertheless, retention periods have been *suggested* for various types of records and these have been circulated to local managers, but they are not compulsory. They have been framed with legal requirements in mind. In practice we find they are fairly widely adopted, but managers are free to vary them as they think fit, bearing in mind the likelihood of reference, and the possibility of litigation.

The removal of records from offices to central storage

In our business the live records needed for day-to-day operations are decentralized, and I should imagine that this is so with most large businesses. Each departmental manager is responsible for deciding when to remove his records to storage.

The fact that office space is charged to a departmental budget and that central storage space is not charged, acts as an incentive to remove records. The procedure for removal is reasonably simple. The records are removed from their file covers whenever possible and placed in transfer cases or ordinary paper parcels. This helps to reduce the bulk for storage and enables file covers to be re-used if their condition is satisfactory. It is the practice to make a parcel of the same type of document so that all the contents become due for destruction at the same time. The department concerned makes a list of the parcels, showing contents and retention periods. The parcels are then removed to the Central Filing Department with a list.

In the filing department a label bearing a bold serial number is placed on each parcel and the corresponding numbers added to the list. All storage bays and racks are numbered and the storage address of all parcels on the list is added to it. One copy of the list is returned to the originating department, the second is filed numerically and the third departmentally. From now on the responsibility for the parcel rests with the manager of the Central Filing Department.

If a record is required to be turned up by the Central Filing Department, it is a simple and speedy matter to locate the parcel, particularly if the department concerned has quoted the address. This is very important, as a departmental manager would have no hesitation in removing records as soon as possible once he is assured that they can be traced when he wants them.

To ensure disposal of records at the appropriate time, an index is kept in the Central Filing Department indicating the serial numbers of parcels due for destruction during each quarter-year. Details of the parcels are notified to departmental managers two weeks before destruction is contemplated so that there is time for second thoughts. If no instruction to the contrary is received disposal is completed.

Using equipment which is economical of space

As already explained, the space occupied by a department is costed against it. Any applications for extra space have to be justified, and it is therefore in the department's interest to make the best use of its space. This policy has two results:

1. It encourages managers to remove records to central storage as soon as possible,
2. It encourages the use of space-saving equipment and methods within departments.

During the last ten years there has been a steady change in the types of filing equipment used in our larger units. Four-drawer filing cabinets have been replaced by hook-on or shelf-filing equipment, which we have found to be so much more economical in space.

An ordinary four-drawer cabinet occupies about 5½ sq. ft. in the open position. The capacity of a drawer is about 21 in., but if a suspension frame and pockets are fitted the capacity is reduced to between 15 and 18 in., depending on the type used. The four-drawer cabinet requiring 5½ sq. ft. in the working position, thus affords a total filing capacity of between 5 and 7 ft. The cost of the cabinet and suspension pockets is about £36.

A hook-on filing cabinet is usually 3 ft. wide and is fitted with a number of horizontal rails, usually between five and eight. The depth of the cabinet from front to rear depends on the length of the files inside it. It is usually between 15 and 18 in. The cabinet can be fitted with a blind or roller shutter at the front so that in the working position it occupies an area of about 4½ sq. ft. and affords a total filing capacity of between 15 and 24 ft. This represents a saving in space of about 60 per cent compared with drawer cabinets. The cost of a cabinet fitted with a blind in the front is about £25.

There is no need to stop here. One of the advantages of this type of equipment is that it is sometimes possible to substitute racks for cabinets and to increase the number of rails up to ceiling height, especially where there are small rooms devoted entirely to it.

Shelf filing has many features in common with hook-on and is even more impressive from the cost point of view. The only restriction on the number of shelves is the height of the room and one need not be restricted to a standard product. It is a simple matter to erect a 'tailor-made' installation from slotted-angle metal with steel or wooden shelves. This is probably the cheapest method of all, costing as little as 10 per cent of the conventional filing cabinets.

Both hook-on and shelf equipment are suitable for filing normal records of quarto and foolscap size, which have hitherto been placed in filing cabinets, but they are not very suitable for plans, drawings or similar types of document. For these the vertical hanging file is probably the best method.

There is one type of record which I would like to mention which is frequently found in offices and often occupies space disproportionate to its value. I refer to the visible card index, widely used for such purposes as customers' records, stores control, asset records, etc., with trays which are drawn out of a cabinet bringing the records to view. I should like to give an example. Some years ago we were faced with the problem of housing a large number of capital asset records. At the time there were over 20,000, increasing rapidly, and it was this expansion that was creating the problem. The records were in card form in visible index trays, occupying more than one side of an office, and the time had come when no more cabinets could be crammed in. By substituting small four-post loose leaf universal binders for the cabinets and sheets for the cards we were able to accommodate the same number of records on two ordinary clerical desks on double racks. The number has now risen to 30,000 but they are still housed on the same two desks. The saving in space and capital cost, apart from operating time, has been considerable.

So much for our principal methods of reducing the volume and cost of keeping records. Here are a few simple ideas that may also be used:

1. Taking carbon copies of replies on the backs of incoming correspondence. We all did it during the war, but it seems to have fallen into disuse.
2. Not taking copies of acknowledgments, simple form memos, and so on.
3. Reducing the size and thickness of records. I made a recent discovery in

this field. Some customers' records had provision for fifty lines entry but 33 per cent ordered twice a year, so the record would last twenty-five years. Eighty per cent ordered up to six times a year so the record would last for nearly nine years.

4. Restricting the number of files by not creating a separate one for less than a dozen papers.
5. Using reply form memos.
6. Telephoning instead of writing internal memoranda or short-distance letters. This may become even more attractive with the future changes in telephone rates.
7. Encouraging the use of what we call 'File 13'—that is the wastepaper basket—for papers not worth filing.

I should now like to explain how we try to bring these recommendations to the attention of the people who can apply them.

Firstly, there is the most obvious way of making them when an O. & M. assignment in a department is undertaken.

Secondly, we keep in close touch with the Administration Officer, who is responsible for providing office space and office equipment within our headquarter buildings. He notifies us when he is asked for extra space or equipment, so that we may advise him or the department concerned.

Thirdly, from time to time we circulate an O. & M. Bulletin among managers and supervisors within the business, including our oversea Associated Companies.

Finally, we conduct courses for management and staff, two of which have a bearing on the maintenance of current records. There is an Office Methods Course for managers and a Filing and Records Course. In the Managers' Course we stress, amongst other things, the need for employing trained staff on filing and for ensuring that people of adequate status and experience decide and indicate to the filing staff where papers should be filed and how long they should be kept.

In the past, filing has often been regarded as a menial task of the lowest order, to be given to the most junior member of the staff, who had only to punch holes in papers and fasten them inside covers. No senior person took any interest or part in filing matters, except when documents could not be traced, and it was in the lap of the gods what happened to records. To ask for a paper on a certain subject was usually quite futile as it meant nothing at all to the filing clerk. The job of weeding, if tackled at all, was usually left until filing cabinets and rooms were overflowing, when it became a gigantic and heartbreaking task.

Now we try to encourage managers to take an interest in their files and records and to arrange that their senior clerical staff take the decisions previously left to filing clerks, also to ensure that weeding is carried out jointly by the senior and filing clerk as a continuous operation. We also try to persuade them to send their filing staff to our Filing and Records Course. This goes into more detail than the Managers' Course and demonstrates the different types of files, filing cabinets, card indexes, loose leaf binders, sorting devices, etc., as well as methods of indexing and cross-referencing. Visits are made to some of the

Company's important filing units to see in use the type of equipment and methods we recommend.

In addition to these regular methods of 'preaching the gospel' an experiment was made about three years ago. This took the form of a special drive to reduce records space. The appeal was made over the signature of a member of the Board. It produced a saving in space of 15 per cent. It cannot be done too often, but it is very effective when it can be done.

Now for a word on microfilming. The British Institute of Management have produced an excellent paper dealing with most aspects of this subject. I will not, therefore, cover the same ground, but will confine myself to two points.

The first is the cost of microfilming compared with the cost of storage. We have made a comparison based on our experience with a microfilming unit in our Central Filing Department. It is not used for systems work but only on records for storage and is occupied about half time.

A 100-ft. reel of film represents between 7,000 and 8,000 exposures which we have found to be equivalent to just over 2 cu. ft. of paper. The finished cost of a reel is about £1. Our output is five reels a week, or 260 a year, representing 530 cu. ft. of paper. The total cost of microfilming for a year, is about £720, which is equivalent to £13 10*s*. for 10 cu. ft. of paper. Assuming paper is stacked 10 ft. high, 10 cu. ft. require an area of 1 sq. ft., plus corridor space estimated at 1½ sq. ft., that is 2½ sq. ft. in all. If storage space costs 10*s*. per sq. ft. per year our 10 cu. ft. of paper cost £1 5*s*. a year to store. At this rate we can store them for eleven years before we have incurred the equivalent microfilming cost of £13 10*s*. If the machine were fully occupied the period would probably be somewhat nearer nine years. These figures, as I have said, are our own. They would probably be quite different elsewhere as conditions would differ.

It is evident from this comparison that it is not profitable for us to microfilm the mass of routine documents, which would be destroyed long before nine years. As a result we microfilm only those records which are scheduled for permanent retention. A word of explanation is necessary here. Obviously, the greatest saving in space would be made if those documents which were to be microfilmed were filmed and destroyed immediately they had passed through the operational stage. Experience has shown that in our case it is not convenient to do this, nor even as soon as they are removed to storage. This is partly due to the fact that the microfilming unit is centralized, but it is not practicable nor economic to have it otherwise. There is, however, another reason. There is fairly steady reference to the records during the first few years of their existence and is quite inconvenient for senior staff to go to the microfilm reader in the central unit every time they may want to see a document and too costly to produce a print every time one is wanted. It has in practice been found expedient to retain originals for about one or two years before microfilming, by which time the frequency of reference is much less. Even so it has been found necessary to install a reader in one of the larger departments.

I do not want to give the impression of being anti-microfilm, which brings me to my second point. Although it may sometimes be unprofitable to photograph records just for storage it may, nevertheless, become necessary at some time to do so purely for space reasons. One cannot put a quart into a pint pot. Fortunately, we have not yet reached that state but, with the ever-increasing volume of paper, we may eventually do so. The space-saving to be made by microfilming is considerable, the films are much neater than the original records when stored and just as easy to trace. Further, it can, of course, be adapted for many office systems.

Finally, what of the future? I read recently of an experiment to record documents on magnetic tape—probably like the B.B.C.'s new VERA. Already it is said to be possible to record the detail from thirty-five million punched cards on one reel of tape of 12-in. diameter. To be able to do the same with other types of business records would be a tremendous step forward.

DISCUSSION

The CHAIRMAN, Mr. J. Sandford Smith (Managing Director, Harold Whitehead Partners, Ltd.) said that as the next two papers were concerned essentially with the historic angle, as compared with the practical aspect dealt with in the first paper, it would seem appropriate to take the discussion on the latter separately.

MR. R. L. W. COLLISON (Westminster Public Libraries) said he was a little puzzled at Mr. Tasker's statement that the microfilm department produced only 100 ft. of microfilm in a day. Why had the pace been so slow?

MR. TASKER admitted that the output seemed low, particularly in comparison with theoretical speeds of 3,000 to 4,000 exposures an hour as quoted for documents of regular stock size in good condition. In his case, however, a fair percentage of the time was taken up in unstapling papers and smoothing out creases before they went through the machine.

The CHAIRMAN asked what other methods Mr. Tasker could suggest for reducing the number of records.

MR. TASKER said he had one or two ideas, since he had anticipated a question of this kind. He had already mentioned the abolition of ledger cards, or ledger records as such. What was called a 'slip' ledger was being used. This was in many instances quite practicable. There did not seem to be much point in posting a debit which would be paid next week and then posting a credit. If the invoice was filed and taken out on payment, there need be no record at all. Address-plate installations—Adrema, Addressograph, Addressall and so on—were sometimes used in units with card indexes parallel to them. The address plate, which had a functional use as well, might be sufficient without the duplicate card record.

MR. C. E. C. HEWETSON (H. J. Heinz & Company Limited) drew attention to Mr. Tasker's remark on substituting sheet type records for card indexes because they were less bulky, more useful and easier to refer to. This was surprising, as he himself thought an index more useful and easier to refer to.

Secondly, had Mr. Tasker any experience of correspondence conducted on tape and how it was filed? There had been some suggestion in his own company that a certain amount of correspondence—if it could be called correspondence—should be carried on by the spoken word on tape.

MR. TASKER said he had brought with him a sample of a small universal binder containing roughly 500 records, say 8 in. × 5 in. The overall size was 9 × 6 × 3 in., or about 1/10th cu. ft. To house the same number of records in a visible card index took 1½ cu. ft. It was quite easy, with a good index, to find anything and the only virtue in the visible card index was its visibility—if visibility was wanted. In this instance, it took far longer for a clerk to move from his desk to the wall where the cabinets were than to reach forward and take out the binder.

He had no experience of filing tapes as correspondence. Magnetic sheets had been transmitted for correspondence, but there was little experience of filing them. On an experimental basis, magnetic sheets had been sent to West Africa but they did not stand-up to conditions in the tropics.

The CHAIRMAN thanked Mr. Tasker for his talk and said he felt sure everyone would have benefited from it.

RECORD OFFICES AND RECORD SERVICES IN ENGLAND

BY ROGER ELLIS

Secretary, Royal Commission on Historical Manuscripts

Second Conference on Business Records, London, 10th June 1958

IT has been observed that during their existence records pass through three stages: the *current* stage, the *dormant* stage, and the final stage when they are either destroyed as of no further value, or are set aside for permanent preservation. The records of business houses follow this course no less than others. The papers we have heard so far today have been concerned primarily with the earlier stages, and it will be my task, speaking as an archivist, to deal with the latter stages, with the problems which they pose and with the solutions which may (perhaps unexpectedly), be at hand.

In the first or *current* stage records are still in continual use, and are essential to the management and progress of business. They are as yet scarcely recognisable as 'records' at all, being yesterday's or last week's letters, answers, minutes or memoranda, and at first sight quite outside the province of the archivist who is associated with 'old papers'; but 'old' is a relative word, and even at this stage the archivist can claim a legitimate interest in—for example—the ink and paper used for such permanent memorials as the minutes of board meetings which (though I must not anticipate), may well end up in his charge.

In the second or *dormant* stage the records are no longer in constant use but must still be kept, for a time at least, at hand. The matters to which they relate, though apparently disposed of, may recrudesce; or they may serve as precedents for similar action in a different field. It is however generally possible to remove them from the main office to some remoter and less expensive place of storage, from which as time passes they emerge less and less frequently until it is finally clear that, as far as business is concerned, they are obsolete. From the purely business point of view they can then be destroyed and their space used for some more productive purpose. Yet this same passage of time which renders them commercially obsolete actually increases their value to the historian: for the further they are removed from the fluctuations of current business the more confidently can the historian accept them as a memorial of established fact. The reasons why old or ageing business records are of value to the historian were ably stated this morning by Professor Blake, and I need not repeat them now. My points are: first, that a business house which is proud of its past, and ready to preserve some of its records in the interests of historical study, will find itself facing two difficult questions, viz. how much is worth keeping? and where shall it be kept?—and secondly, that there exist in this country *record offices*, and what for convenience may be called *record services*, through which a satisfactory answer to each question may be obtained.

Of the *record offices*, the largest and oldest is the Public Record Office, established by Act of Parliament in 1838: a new Bill to establish it afresh is before Parliament now. This Office receives, preserves, and makes available for inspection the Public Records of this country, which consist in effect of the records of the Courts of Law, and of the Ministries transmitted after rigorous scrutiny and removal of valueless papers and files. This scrutiny of departmental papers was until recently undertaken by joint committees composed of Inspecting Officers from the Public Record Office and representatives of the Ministry whose records were under review; this committee drew up a Schedule dividing the records into three classes: immediate destruction, preservation for varying limited periods, and permanent preservation. This system is now being superseded by another, described in detail in the Report of the Grigg Committee,[1] which in brief consists of two reviews of the records made while they are still in the hands of the Ministry, the first being made after five years by the Ministry's own staff and the second after twenty-five years jointly with the Inspecting Officers of the Public Record Office. Both systems are based on the principle that when records are being selected for permanent preservation the interests of administrative need and of historical study must each be given due weight.

The Public Record Office is rarely concerned with records in private ownership, and then only when they are closely related to some official series. I have dwelt on it because its methods of selecting records for preservation and destruction are applicable elsewhere, and I shall return to them again in another connexion. But besides the Public Record Office there has been established in recent years a large and increasing number of *local record offices*, which are of much more direct concern to the present meeting. The great majority of these are established and financed by local authorities—counties, cities, and boroughs—primarily for the care of the records of local justice and administration, but ready also to accept gifts, or deposits on loan, of records of other kinds relating to the locality; and it has been increasingly recognised of late that of these business records form an important class. Indeed of an area such as Manchester, which has grown from a small town to a great city in less than two centuries through commerce and manufacture, it can be said that the true history of its growth and prosperity lies in the records of its business houses; and those who control record offices are aware of this and are very ready to accept such records as gifts or loans.

There are also available for your benefit what I have called *record services*, i.e. the advisory or consultative bodies, official and unofficial, which themselves maintain no repositories but exist to help anyone who is concerned with the preservation, publication, and use of records. These are:

(1) The *Historical Manuscripts Commission*,[2] established in 1869 by Royal Warrant and periodically renewed, whose task is to discover and report upon valuable collections of records in private hands. Its printed reports and calendars now run to many volumes. The Master of the Rolls is *ex-officio* Chairman. Under its direction the *National Register of Archives* is being compiled, an enterprise which has gone far beyond its promoters' expectation and now operates through its trained staff not only as a central directory of privately-owned records (including already some of business houses) but also as a documentation centre for students and as a corps of inspectors ready to investigate privately-owned records at the owner's request.

(2) The *British Records Association*[3] is an unofficial but powerfully supported

body (its Patron is the Queen Mother and its President the Master of the Rolls), whose subscribing members number well over a thousand and include a considerable number of business houses. Its principal functions are to rescue valuable records in danger of destruction (it has a special *Records Preservation Section* for this purpose, handsomely though not indefinitely supported by the Pilgrim Trust); to bring together the originators, preservers, and users of records for their mutual benefit; and to publish a journal, and occasional papers discussing record questions.

(3) The *Business Archives Council*[4] is also an unofficial body, supported by subscriptions from business houses. It encourages the writing of business histories and the use of business records for general historical study, and shares with the British Records Association the task of rescuing important business records and arranging for their preservation in suitable places.

(4) The *Archivists** and their trained staff at the local record offices, whom I mention last only for greater emphasis. The specialized training of an archivist requires him to study both the selection of records for permanent preservation, and all the numerous and technical matters relating to their subsequent care such as arrangement, listing, repair, protection from rough usage or loss or misplacing, prevention of unauthorized access, control of temperature and humidity in the place of storage: all of which the keeper of current files in a business house may well regard as outside his province. He is in fact trained to deal with any problem which records may present.

These then are the resources upon which a business house can draw when considering the preservation, permanently or for a shorter period, of its records. Making use of them is a very simple procedure. First (as Professor Blake reminded us this morning) take advice upon what should be preserved and what may be safely destroyed; and in this your nearest adviser will be your local (county or other) Archivist. You can discover who he is from the *List of record repositories in Great Britain* published by the British Records Association. Part of his daily task is to serve all historians, whatever their fields of study, and his advice to you will not be weighted in favour of any particular subject or period. He can act for you (if his time allows), in the same way as the Inspecting Officers whom I mentioned earlier act for the Ministries.

Then, when you have decided what to keep, take advice on where or how to keep it. If you have or intend to have a record office of your own, like that maintained by the Hudson's Bay Company, your local archivist can advise you on its construction and equipment and can call on specialists for help if needed. Few business houses however are likely to go to these lengths, and most will prefer to place their records, as gifts or deposits, in an existing record office; and county and other local record offices are always most willing, provided that they have the room, to receive such deposits and to give them every care. Moreover no business house need ever hesitate to deposit its records on the grounds that they contain confidential material, or that possession and control over the records will be lost; for the terms of such deposits are in no way rigid and may be negotiated *ad hoc* to conform with all reasonable conditions laid down by the depositor, particularly as regards access. Many such deposits have in fact taken place, as the indexes of the National Register of Archives and of the Business Archives Council show; and may I in this connexion ask all business houses who do deposit their records to arrange for at least a summary report on them to be sent to one or both of these bodies.

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* Whose professional association is the *Society of Archivists*; Hon. Secretary, P. Walne, Esq., Berks Record Office, Reading.

The suggestion I am offering is, in fact, that a business house which wishes to preserve permanently some portion of its records should cultivate relations with a local record office similar to those of the Public Record Office with the Ministries it serves. Such an arrangement, if successful, can relieve the firm of much work and thought quite irrelevant to its primary aims, and add greatly to the value of the local record office's holdings.

If however your local Archivist cannot for any reason solve all your problems—if for example he is too short of space or staff to offer immediate help, or if your firm has branches or activities in several different localities—then you are welcome to consult one of the national bodies I have lately mentioned, and your best approach in the first place is probably through the Business Archives Council, which makes a special study of your affairs, and works in close accord with the British Records Association and the Historical Manuscripts Commission. And lastly, please do not let modesty stand in your way. The importance of the records of the greatest commercial and industrial houses is self-evident, for their affairs are involved with national policy. It may be less easy to see why anyone from outside can be interested in the old papers and books of a small family firm or factory; but to local history, and to the history of people and of personal endeavour, the records of just these smaller firms and factories offer a unique contribution.

REFERENCES

1. *Report of the Committee on Departmental Records*, 1954. H.M.S.O. Cmd. 9163.
2. The Historical Manuscripts Commission and the National Register of Archives are housed at the Public Record Office, Chancery Lane, London, W.C.2.
3. Inquiries about disposal of documents should be sent to the Secretary, Records Preservation Section, Charterhouse, Charterhouse Square, London, E.C.1. Other inquiries should be sent to the Honorary Secretary, British Records Association, Pelham House, Lewes, Sussex.
4. Inquiries should be sent to the Secretary, Business Archives Council, Devereux Buildings, Devereux Court, London, W.C.2.

RECORD REPOSITORIES IN GREAT BRITAIN: THEIR USE*

BY B. R. CRICK, B.SC.(ECON.), PH.D.

Assistant-Director of the Survey of Sources for American Studies in Great Britain and Ireland

Second Conference on Business Records, London, 10th June 1958

IT is a pleasant though dangerous task to follow such distinguished speakers who have said most of what could reasonably be said already. In my own approach to the subject I speak somewhat on behalf of a body called the Survey of Sources for American Studies. This was set up, thanks to a generous grant from an American source, by a group of English scholars called the British Association of American Studies, in order to publish a book that would be a survey of and a guide to all records in Great Britain and Ireland that relate in any way to American history or literature. All I would claim for us is that we have tested the repertory of British records, as described by the previous speaker, more thoroughly than any other person or body; and have conducted a certain amount of original research, particularly in the sphere of business records. . . .

I am straying into a dangerous parenthesis, but I must say that there are cases where the archivists' *chimera of perfection* is at odds with the principle of the greatest happiness of the greatest number of scholars. At the risk of offending some people here who have helped me greatly and generously, I would say that I find it hard not to share the impatience of some scholars that a few county archivists work away at detailed, itemised lists of small sections of their collections (and with no real hope of ever listing everything), while there is no general guide to their collection as a whole. Scholars should be able to expect that somewhere they can find a general description of the Archive which indicates whether there are records of local firms and, if so, names them, giving their main products and trading dates.

Here I must record regretfully that, in reply to our queries to business firms likely to have been in the nineteenth century export or import trade, the overwhelmingly typical answer has been that their old records have been destroyed—very often for the war-time salvage drive. However, there is another type of response that is more worrying, the reply that the firm is afraid that it cannot help us in any way because the older papers in the library are of a 'strictly technical character'. I wonder if the man who wrote that reply realises that to the economic historian it is often a purely technical aspect that is important.

Scholars must strive to convey to business men that the history of their firm or industry is as much a part of 'history' as the history of famous names. Where papers exist, we have found that most business men have not been worried at the idea of historians rummaging in them. Puzzlement more than concern has been the typical emotion. I have effected more transfers of records through the indifference of the owners than through their enthusiasm to have them read. Certainly one can come across the fear of the skeleton in the cupboard. The great shipping firms of Liverpool have time and time again proved reluctant to allow their records to be inspected, because they know that at some stage in the firm's history it was making a good thing of the slave trade—as everybody else knows too, which is the silly thing about it. Very few of these skeletons in the cupboard are real in the eyes of any sensible man at all; and one would not expect the records to rebound to the discredit of anyone living. . . .

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* This paper has been abridged.

This brings me to another somewhat touchy point. A useful bibliography of business histories has been issued by the Business Archives Council but the judgment cannot be avoided (it can only be left unsaid), that more than half the titles on this list are rubbish. And many of them are rubbish not because they aim to be advertising—a completely legitimate aim—but because they fall so hopelessly between two stools and fail to be either good history or good advertising. . . .

One other point on this topic—when an official history of a firm is sponsored, it should be an absolute rule of scholarship, and of prudence if the author wants to be taken seriously by scholars, that the commission should not be undertaken unless the records on which the history is based are made available to other scholars, at least on publication. The records need not necessarily be made available to everybody, but the firm must allow some other people to see the evidence. This constitutes verification, the chance, however remote, that someone else can go through the same material and reach the same result, or else write in rebuttal.

What kind of business records does the historian most want to see? Not just the annual balance sheet, for after all there is the Companies Registration Act and, for a small fee, one can inspect the annual report of any company and the supporting papers in Bush House. What is particularly interesting from my point of view, for instance, is the correspondence that took place between all types of businesses and their agents in the United States of America. Such correspondence tends to be full and informative, not merely about business technology and techniques, but about politics and customs of the people to whom the agent is trying to sell the product.

What kind of help can be gained from the existing archival and record organizations? The most urgent need is for a central register of business archives, a register on which the economic and business historians can draw and which summarises the existing scattered knowledge of where things are and on what terms access can be gained. Something of this type is, I gather, in progress, but its completion still seems a long way off. I intend no criticism, far from it, of the work of the Business Archives Council, but what I am suggesting is a very big undertaking and they simply have not the funds to do it. . . .

Granted there is the National Register of Archives itself. It is supremely helpful, from the general historian's point of view. It is the envy of foreign scholars. But after all, the interest in business history, particularly the interest in the history of Anglo-American economic relations, is a comparatively recent development. The reports in the National Register fundamentally depend upon the interest of the reporters in the counties and it is a fact that if one consults the files of the National Register of Archives, one finds little connected with business history.

I would finally stress two things from the scholar's point of view. One is directed to business firms—that in considering what records to preserve they should think in terms of what might be interesting not just from their own point of view, but from the point of view of an independent history of the whole industry.

My second point is aimed at the records organizations, and I dare to claim this; the 'hundred years' attitude towards records simply will not do, particularly with regard to English investment and export in the American market, for the most important period in this respect was after the American Civil War.

I have said some contentious things but I have been able to speak with complete irresponsibility in that I am neither an archivist nor an economic historian. I have had the most interesting job of trying to see what can be drawn from the existing record organizations; and by far the largest gap in the materials for history in this country is in respect of business records. It is a gap that could readily be repaired with very little difficulty, very little expense, very little trouble to business men themselves. What the scholars will do with the material when they have got it, is, of course, another question.

DISCUSSION

The CHAIRMAN (Mr. J. Sandford Smith) asked whether Miss Shrigley would like to talk for two or three minutes.

MISS I. SHRIGLEY (Business Archives Council) said that in view of the striking misconceptions put forward by Dr. Crick, she ought to say one or two things, because he might have misled some people and she did not want that to happen.

The Business Archives Council was tremendously interested in business histories, whether little pamphlets or larger books, if people were willing to hand over their records after use in this way. Of the 500,000 registered companies only a few hundreds had written their history, as Dr. Crick had rightly said.

But the point was that people produced these little booklets for a number of reasons, not only to celebrate a Jubilee of fifty or one hundred years which did not happen very often, but for a variety of other very important reasons; for example, to attract new capital or to attract new customers or to open up, if this was the word that must be used, a new area or to foreshadow amalgamation or to advertise new developments and new products. All these things involved the firm in searching through their archives and often outside research was needed to fill the gaps.

In order to keep track of this material, a Register of Business Records had been founded in 1934. At the moment it was fairly substantial, and it was growing every day. That register showed where records had been put if they had not been kept by the Council itself when firms had handed them over. Generally they were handed over for the use of students and research workers, but not always. There were safeguards if required, and this was a very important aspect.

Where a firm was in some doubt, it would hand records over more willingly if it could be assured that no unsuitable use would be made of them, at least for a limited period which they sometimes specified.

As a result, business firms who were at all interested in making use of writers and researchers and people who made lists and indexes and catalogues of records could write to the Council and ask whether it could offer any services for what they particularly wanted. They wrote at various levels, and rather than keep back inquiries which might be thought to be trivial, she would ask them all to write and she would promise to answer within twenty-four hours.

The CHAIRMAN asked the Director of Aslib to sum up his impressions of the Conference.

The DIRECTOR said that two salient lessons could be drawn from the discussions. The first was to get rid of everything and the second, just as important, was to keep everything. The explanation of that anomaly was that speakers had been talking about two quite different types of material which could, broadly speaking, be classified as short-term and long-term material.

It seemed to be generally agreed that short-term material, such as copies of sales invoices, should not be created in the first place on the profligate scale that was quite common in business concerns. The golden rule was to produce the minimum of paper records consistent with efficiency. The second rule—his favourite—was File 13. Very few persons really made the best use of the wastepaper basket, but his secretary and he himself tried to throw away the maximum possible amount of paper once a week before filing actually took place. Finally, if this short-term material had to be kept—and clearly some of it must sometimes be kept for a certain period—Mr. Tasker had given a lead. There was no need to adhere slavishly to certain types of equipment like the four-tier filing cabinet. Thought must be given to the most economical storage equipment, possibly designed and devised by oneself.

The second category of material had been discussed by Professor Blake, Mr. Ellis and by Dr. Crick in particular. Three points stood out. First, leases, title deeds, board and committee minutes and similar documents should never be destroyed before one had ascertained, from someone who knew about the preservation of records, the legal requirements or the general principles on which to reach a decision about keeping them oneself or handing over to some other suitable repository. Secondly, while not everyone would be expected to know instinctively what was valuable and inherently worth keeping, the better it would be for all concerned if more people could be made aware of the need to cultivate a 'feeling' for records and their preservation. Thirdly, there could obviously be no rules of general application as to what to keep and what to discard. The needs of institutions and firms differed widely and each case must be reviewed in the light of its particular circumstances.

One thing in particular had disappointed him about the conference. Far too little had been heard about the qualifications and mental attributes of the people upon whom the important responsibilities of selecting and preserving records devolved. He would have liked to hear more about how they could be selected and trained to use their own individual qualities in their work.

In conclusion, a good deal of what had been said about the preservation of records and about making them available to posterity was practical common sense. One might reasonably claim that the Conference had made the participants conscious of a vital problem before it was too late to seek a solution.

A few means of at least mitigating the difficulties had been suggested, and, if the Conference had done no more than that, he hoped members would feel it had been eminently worth while.

The CHAIRMAN, in closing the Conference, said he felt sure everyone would wish him to thank those who had organized the Conference, bringing together people from the business world, historians and archivists to discuss a matter which concerned them all. Thanks were also due to the speakers who had presented papers which he personally had found most interesting as, he felt sure, had everyone else.

THE NATIONAL LENDING LIBRARY FOR SCIENCE AND TECHNOLOGY—1958*

BY R. M. BUNN
D.S.I.R. National Lending Library Unit

LAST year three papers[1, 2, 3] were published about the work of planning and starting the National Lending Library for Science and Technology. The purpose of this paper is to record a further instalment of the story. The current work divides itself into three main sections. Firstly, collecting and recording the literature, secondly, making the literature available, and thirdly, considering the effects the new library will have on the existing systems for providing scientific and technical literature, and its relationship to these systems.

Collecting literature

We have had a large amount of literature presented to us. We also know that we shall be receiving for the new library a large proportion of the stock of the present Science Museum Library which that library will not need in its new capacity as the library of the Imperial College and the Science Museum. What we needed to know was the extent to which it was necessary to acquire copies of the literature which the Science Museum Library would be retaining. This, of course, is only necessary for the more frequently used material. We suspected that much of the literature in the Science Museum Library was so little used that duplication was unnecessary, but that on the other hand a small quantity was so heavily used that to give a loan service with something like a 90 per cent availability on demand it would be necessary to purchase two, or more, copies of certain particular titles.

Luckily, the majority of, and by far the most important, holdings of the Lending Library will be serial publications. The survey of the use made during 1956 of the serials in the Science Museum Library[3, 4] has now been completed. We are basing our serial buying policy on the results of this analysis, both from the point of view of deciding which back issues we should purchase and how far back we should buy them, and also how many copies we need of current issues of serials. We have already started to buy back sets of some heavily used serials and the current parts of a larger number of serials.

Another factor which will have a great influence on the need to buy duplicate copies of certain serial publications is our binding policy. Here we intend to depart completely from orthodox procedure by binding the separate parts of heavily used serials instead of binding them into volumes. This will increase the availability of the serials concerned, and may even, except in a few exceptional cases, completely do away with the need for duplicate copies. It will also make our packing problem very much simpler, and cut down our postage bill to an enormous extent. We are at present experimenting with several different types of binding for these serial parts. In general, the cost of this type of binding per volume is about double that of traditional binding. Taking into account present-day postage costs, therefore, it would appear that if any volume is borrowed more than about eight or nine times during its entire life, on postage costs alone it would be cheaper to bind it into parts than into volumes. The one main disadvantage of binding by parts appears to be that it multiplies the likelihood of mis-shelving. We have given some thought to this and we are hoping to overcome the problem to a very large extent by marking the spines of the binding in such a way that they will show immediately if a part is misplaced on a shelf.

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* Based on a lecture given to the North Western Regional Library Bureau, June 1958.

As well as collecting literature, copies of which are already in the Science Museum Library, we have to consider what we intend to do about the literature which is published in the scientific and technical field, but which, for some reason or another, the Science Museum Library has not been able to collect. This literature presents a very much more formidable problem. Often we do not yet know whether it is worth collecting. We know that a great deal of scientific literature is used at present to a negligible extent. What we do not know is whether it is not used because the information contained in it is more or less valueless, or whether it is because people just do not know that it exists. This is one of the things we hope to find out. It is one of the functions of the National Lending Library to promote the use of scientific and technological literature. One way we propose to do this is to draw the attention of such people as the editors of abstracting publications to literature which appears to be unknown. The final job of determining the value of the literature, however, lies with the ultimate user, and not with the library. Following this policy, therefore, we would expect in the first place at any rate to collect material published in the scientific and technical field which is little known at present, even if it is not what might be termed very high grade material. If when we have attempted to promote the use of this material it becomes evident that the material is virtually useless, we would reconsider our acquisition policy for the particular titles concerned.

Library records

It is noticeable that in the earlier papers that have been written about the National Lending Library very little has ever been said about library records. This is partly because we are trying to plan a library with as few stock records as possible. One thing we have to remember in our planning operations is that the literature of science is expanding. The National Lending Library must be capable of expanding to whatever extent is necessary. In twenty years time, for instance, we expect the library to have somewhere in the region of 1,000,000 volumes. In a hundred years time this may well have grown to 20,000,000 volumes. The site we are seeking must be larger than any existing library, just in case it remains necessary to store literature in its traditional form. Our procedures must not become fossilized, but must be capable of change or adaptation as the nature or size of our problem changes. We must be careful not to create a library which in fifty or a hundred years will be strangled by the internal complications of its own procedures.

This is a problem which does not appear to have been studied elsewhere to any great extent. The solution we have begun to adopt is to aim at having a maximum amount of literature with a minimum amount of records. For instance, when we started to buy Russian books we found that they go out of print very quickly. One of the practical things to do was to place an order with a bookseller for one copy of every Russian book he could find which satisfied our requirements as regards subject and level. Parallel with this we started to develop exchange arrangements with organizations in Russia. As we never know what we will receive from the bookseller until it arrives there is, naturally, a possibility of duplication. In practice, however, we find that the cost of this duplication is negligible compared with what it would cost to eliminate it. At present we spend no staff time on selecting or ordering the Russian books we purchase, and moreover if we tried to eliminate all possible duplications we would, in practice, acquire far less Russian literature. In general we can say that we have every Russian book in our field of interest that is in Collet's list, and what is more, we have it as soon as it reaches this country. It grieves us that so far we have not been able to use as our accessions lists some of the lists of Russian books which have been produced by other organizations.

Another field in which we have been perhaps even more successful in applying the principle of acquiring the maximum amount of literature and preparing the minimum amount of records is that of the United States PB reports. These are reports of United States Government contracts which are made available by the Office of Technical Services of the U.S. Department of Commerce. Most of them are issued as microfilms, and at one time the D.S.I.R. Technical Information and Documents Unit used to select about one-third of these microfilms from the list given in *U.S. Government research reports*, order them from the United States, and then summarize and index them when they arrived. Now we have a contract for the library to be supplied with a complete set of all these PB reports automatically as they are issued. Our selection problem has, therefore, disappeared, and we spend no staff time on ordering. The U.S. publication *U.S. Government research reports* has become our accession list, and our index cards are supplied by the U.S. Department of Commerce. We are, in fact, receiving three times as much literature at no real extra cost, and we obtain it much more quickly than we did previously. There is a small amount of literature which appears both as a PB report and as a normal serial publication, but we have decided that it would be uneconomic to attempt to eliminate this duplication. It would involve making much more elaborate records than we are doing at present, and for the small number of cases for which duplication occurs it is much cheaper to use an extra copy of the document as its own cross reference.

The fact that our stock will be more or less comprehensive does, of course, help us considerably in following out this principle of using, wherever possible, existing records, rather than making our own. It is not, however, all quite as simple as the two examples quoted might indicate. For instance, we have not yet discovered how to apply the principle of the maximum amount of literature and the minimum amount of records to Chinese literature. Nevertheless we think that if the principle is written deeply enough on our foundation stone the library will be able to survive the floods of scientific literature which it will be receiving in the future. We do, of course, recognize that we shall always have to do something to let people know what is available.

Loans system

Having collected the literature and made, or obtained, certain records so that we know what we have got and where it is on the shelf, the next question to consider is how we are going to make the literature itself available. To a great extent this has been decided for us, for the immediate future at any rate, by the force of circumstances. To avoid confusion we decided to use the same form and procedures as the Science Museum Library.[5] Our experience to date has indicated that this was an essential decision because, although at the moment we are lending very clearly definable groups of literature—that is Russian literature and the American PB reports—we are, in fact, receiving requests for all sorts of literature. We suspect that this confusion is partly due to our name. Those requests we cannot deal with we pass over to the Science Museum Library. Similarly, any requests which the Science Museum Library receives for Russian literature they pass to the Lending Library. We hope that as the National Lending Library develops in the future we shall always be able to specify exactly what is available for loan, but we think that using the same procedure as the Science Museum Library will make it possible to rectify the misunderstandings which are bound to develop.

Photocopying service

As regard photocopying, two procedures exist. For normal size copying we are using the forms and procedures of the Science Museum Library's photocopying service.[5] Again, because this is the simplest method of dealing with requests which may get sent to the wrong place. A large amount of the PB material, however, and to a very much less extent, some of the Russian material, is being supplied to us in microfilm form. As the Science Museum Library is not equipped to deal with reproduction from microfilm we are using Her Majesty's Stationery Office for the supply of microfilms and enlargements of microfilms. Looking to the future, we naturally envisage having our own photocopying service, and we hope that the demand for photocopies will grow faster than the demand for loans. We may find it necessary even to encourage the demand for photocopies economically. One way in which we could do this would be to make a service charge for loan requests, and design the request form so that in normal circumstances we would have the option, where small items are requested, of lending the document or providing a photocopy.

Relations with other systems

The third question, the relationship of the National Lending Library to the lending system of the country as a whole is the one in which our ideas are most tentative. The position as we shall inherit it is a curious one as it really consists of two systems in parallel. On one side there is the system of libraries grouped together under a regional bureau, which in turn is linked to the National Central Library. Running parallel with this system is the second loan system based on the Science Museum Library. This library is, at present, lending directly to about 1,200 organizations, each of which has some library system of its own. Unlike the Regional Bureau/N.C.L. system the Science Museum Library system, of course, applies only to science and technology.

The two systems are linked at many points. For instance, the larger special libraries which borrow from the Science Museum Library also take part in regional schemes. The larger public libraries, which are often the headquarters of a regional bureau, borrow direct from the Science Museum Library. Most of the universities are members of the Science Library Supplementary Lending Scheme, and the National Central Library borrows from the Science Museum Library. In magnitude the Science Library system and the number of loans passing through the National Central Library are at present about similar in size, although if only scientific and technical literature is considered the Science Museum Library scheme is the greater, and is probably similar in magnitude to the whole Regional Bureau/N.C.L. system.

In both systems lending is to a great extent voluntary and, except possibly for the N.C.L.'s own library, is never mandatary. The Science Museum Library decides what it will lend and to what extent. In fact, last year, owing to the pressure of the demand the Science Museum had to restrict its service and urge its users to try other sources first. Other libraries in this voluntary system act, to a great extent, arbitrarily on the loan requests they receive. They are influenced more or less by such things as their relations with the would-be borrower, the type of material that is requested, and above all by the total volume of requests they receive. What we have to consider is how this system will be altered by the creation of a library whose business it is to lend and to ensure that scientific and technological literature is adequately available. To what extent will the existence of a deliberately organized lending service attract the loan requests which are now satisfied through the normal interlibrary lending system. This is one of the most uncertain factors in our plans for the future. In general we are planning on the basis that when we become fully operational, which we hope will be in about four or five years time, we shall be able to deal, if necessary, with twice the volume of requests which are now being received by the Science Museum Library.

As we see it, if the National Lending Library attracts some of the loan requests which are now dealt with through the interlibrary loan systems, this will be a good thing. There are many special libraries who would lend much more freely if they did not receive so many requests for the more frequently used material, and if the total number of requests they received was smaller. We hope, therefore, that the existence of the National Lending Library will attract more libraries to the interlibrary lending systems, including to a limited extent those large libraries which now refuse to lend at all. We also hope that the existence of the National Lending Library will stop special libraries withdrawing from the system, a distinct possibility because of the existing pressure of interlibrary loans.

As the National Lending Library service becomes established we think that special libraries may prune their shelves, and we hope that they will offer the literature they have for disposal to us. As a result of the literature appeals we have made during the last twelve months, we have already received literature presentations from many libraries.[2, 6] These have varied from a few volumes to several tons, and most of it has been extremely useful and valuable material. It has helped us to start building up back sets, and even when this building up process is more or less complete we hope that libraries will continue to offer to us their little used material which it is uneconomic for them to retain on their shelves. In this way we shall not only be able to improve our holdings but also to replace the small, but inevitable, losses which must arise in operating a loan service.

This paper may have conjured up the vision of an enormous centralized loan service which will entirely replace the loan arrangements developed in the past. We do not think the change will go quite as far as this. In fact we certainly would not wish it to do so. To begin with, nothing the National Lending Library can do at present will replace the informal loan arrangements between libraries in the same area which can deliver whatever is required within a few hours. It is possible that if coaxial cables become plentiful and the copyright laws are changed we might be able to provide a more rapid service. But this seems at present a possibility of the more remote future. For the more immediate future, the best we are contemplating is that if a Telex requisition is received in the library sufficiently early one day, the publication will reach the borrower by the first post the next morning.

From time to time we plan to publish lists of frequently used material, and we hope that regional systems will seek to ensure that this material is held locally. This should not throw an enormous burden on regional systems. From the data we obtained in our use survey of the Science Museum Library's loan system we found that about 80 per cent of the demand on the Science Museum Library was for serials, and 80 per cent of the serial demand was for about a thousand particular serials.[4] For the remaining titles that were used, and there were a large number of them, it would appear from the analysis that one copy held in the National Lending Library would be more than adequate to meet the total national demand. In fact in many cases it would be sufficient to meet the international demand from, say, the whole of Western Europe.

Finally, we should, in fact, have to actively oppose any excessive centralization on the National Lending Library. For one of our purposes is to promote the use of literature, and for this we feel it is essential that there should be local library services with sufficient literature to guide potential users to the literature they require in the national collections. Indeed, one idea we have contemplated, in a very tentative way, is a scheme for grading libraries which can provide some definite levels of service in the scientific literature fields. One could even imagine that this grading would operate in a similar way to that used by the Automobile Association in grading hotels one might even come to expect to find 'N.L.L. Approved' signs hanging outside the larger libraries!

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Letters to the Editor

The Editor,

Following the publication of my paper on Microrecords in the August 1958 issue of the *Proceedings*, among the comments which resulted were those from two companies engaged in this type of work.

Mr. Eugene B. Power, Director of University Microfilms Ltd., pointed out that whilst a single copy of a microcard was not as economical in production as a film, in general, the cost of 25 microfilms and 25 microcards was approximately the same. He thought that roll film facilitated browsing and searches of long files more easily than cards and that cards were subject to mis-filing. In the United States about twenty times as many library microfilms are produced as there are cards.

The use of Xerography has widened the scope of microfilm. Not only can positive microfilms be produced but full-sized paper enlargements in one-copy editions can be provided at about 3½*d.* per page. Alternatively, paper masters can be prepared for inexpensive offset-litho editions of up to 500.

Microfiche has no great acceptance in U.S.A., preference being held for the use of cut roll film in jackets. The former is not subject to large-scale production methods. On the question of speed in handling, there was probably only about 20 seconds difference between the two media.

Mr. Power considered that the use of 16-mm. film for the preservation of library literature should be avoided because the resolution was so poor, a factor of considerable importance from the user angle.

Reproduction by libraries of single negative copies was uneconomical. Costs could only be reduced to the equivalent of binding costs, when the cost of the negative was spread over a number of positive copies, thereby saving about 95 per cent of conventional storage cost. The writer considered that there were too many technical problems in producing a good film and that, all things considered, in spite of the apparent lower cost, microfilming should be done by a competent firm.

Micro Methods Ltd. state that they are now agents for many of the major American producers of microcard. In addition, they have begun publication of microfiche and microfilm editions of English journals such as: *Journal of Royal Institute of Chemistry, Electroplating and Metal Finishing, Chemical Products, Achievement*, etc. Their programme includes out-of-print books and microcard editions.

As an example of the black-and-white and colour reproductions of historical documents which they are undertaking, the Holkham Hall MSS. are available in 35-mm. film strip form.

Inquiries about the company's activities should be addressed to: Micro Methods Ltd., East Ardsley, Wakefield, Yorkshire.

J. Burkett,

9th September 1958. *Hawker Siddeley Nuclear Power Company Limited.*

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ASLIB CALENDAR

NOVEMBER

THURSDAY 27th–FRIDAY 28th. Northern Branch conference at Sheffield. See paragraph below.

DECEMBER

TUESDAY 2nd. Midlands Branch meeting.

1959

JANUARY

WEDNESDAY 21st. Midlands Branch meeting.

MARCH

WEDNESDAY 25th. Midlands Branch Annual General Meeting.

Thirty-third Annual Conference

The Thirty-third Annual Conference was held at Nottingham University from 5th to 8th September 1958. Aslib was again lucky with the weather as Nottingham escaped the heavy thunderstorms experienced in other parts of the country and it remained generally warm and dry until Monday. This was particularly fortunate as delegates were staying in three separate Halls of Residence, namely: Hugh Stewart, Florence Boot and Wortley, and many of them walked across the grounds to the meetings which took place in the Trent and Portland buildings.

Most of the 260 delegates—some of whom came from as far afield as Australia, the Netherlands, U.S.A. and the West Indies—arrived on Friday evening in time to enjoy a cocktail party kindly given by the Lord Mayor and Corporation of the City of Nottingham in the Council House. After dinner the President formally opened the Conference with an inaugural address given in the Great Hall, Trent Building, where most of the subsequent meetings took place.

The President's address will be published in the November issue, together with papers given on Saturday morning by Mr. P. Hutber on 'The Scope and Use of Economic Information', a summary of the contribution made by the Economics Group to this session, and the paper on 'Marketing Research' given by Mr. W. A. Cooper. Reports and papers from the meetings held on Saturday afternoon and Sunday, to be published in the December issue, include 'Research in Library Information Services' by Mr. C. W. Cleverdon and Mr. C. W. Hanson, 'The Art of Lecturing' by Dr. G. Kitson Clark and Commander E. Bidder Clark, and 'Patent Classification' by Mr. M. R. Gheury de Bray and Mr. Nicholas Flower. An account of the simultaneous meetings held by the Aeronautics, Furniture, Textile, and Chemical Groups, and the Electrical Translators' Section of the Engineering Group will be included in January.

The Conference was ably and entertainingly rounded off after tea on Sunday by Miss M. A. Carter, Recorded Programmes Permanent Library, BBC, with a lively talk on 'Sound Sidetracks' liberally illustrated with records. Miss Carter described the work of the Current and Permanent record libraries; the former acting as a traffic office and dealing with new records, which are either passed on later to the Permanent library, or destroyed if they have no historic value or prospects of future use. She explained the importance of careful selection of records for use in broadcast programmes in order to ensure perfect continuity of time, place, and the natural position of the hearer in respect to the sound. Miss Carter also pointed out that BBC recorded sound is not faked except where fantasy is concerned and when it is impossible to record the actual sound required, as for example in programmes on interplanetary exploration.

Northern Branch

The Branch Conference will be opened at 9.30 a.m. on Friday 28th November, in the Library Theatre, Central Library, Surrey Street, Sheffield. Delegates will be welcomed by Councillor J. Thorpe, Chairman of the Sheffield Libraries, Art Galleries and Museums Committee. The morning session will by a symposium on practical aspects of special library work. The Chairman will be Mr. A. R. Cameron, A. V. Roe & Company Ltd., and Mr. John Bebbington, Sheffield City Librarian and Information Officer, will lead the discussion. Fifteen-minute papers will be given by Miss B. Warburton, A.L.A., the United Steel Companies Ltd., on 'Methods of recording loans'; Miss A. J. Spencer, F.L.A., Petrochemicals Ltd., on 'Individual abstracts versus bulletins'; Mr. C. C. Linstead, Edgar Allen & Company Ltd., on 'The use of trade literature'; Mr. F. Newby, Hardman & Holden Limited, on 'Why make your own indexes?'; and Miss H. Thornton, T.T.M. (Research) Ltd., on 'Is the circulation of periodicals desirable?' After lunch delegates will be able to visit Messrs. Steel, Peech & Tozer, steel melting and rolling works, or Messrs. George Bassett & Company Ltd., sweet manufacturers, or enjoy a conducted tour of the Sheffield Central Library.

The Conference fee will be 10*s*. or 24*s*. including dinner on Thursday 27th November. Application forms and details of Sheffield hotels will be supplied, on request, by the Honorary Secretary, Miss E. Boddy, The Retreat, Tideswell Lane, Eyam, near Sheffield.

New British Standard for Transliteration

The *British Standard transliteration of Cyrillic and Greek characters* (B.S. 2979: 1958) has now been published. It includes two alternative systems. The first of these is the British system which follows closely the recommendations of the Royal Society and is intended solely for work confined to English-speaking countries. The second system is intended to implement the recommendations of the International Organization for Standardization, which differ considerably from common practice in English-speaking countries and would, it was felt, be unacceptable for general purposes in Britain. Tables are included for transliteration from Church Slavonic and Rumanian Cyrillic and from Greek, and back from Latin into Cyrillic. The new standard should be of value to all engaged in library and bibliographical work, and it is to be hoped that the compromises adopted in an effort to overcome the difficulties caused by differing phonetic values of Latin characters in various languages will prove successful. B.S. 2979 : 1958 may be obtained from the British Standards Institution, British Standards House, 2 Park Street, London, W.1. Price 12*s*. 6*d*.

UDC Practice

The British Standards Institution, with the support of Aslib and the Library Association, is to organize a series of six one-day discussion meetings intended to be of practical use to UDC users in selected subject fields. The meetings, which will last from 10 a.m. to 5 p.m. (with an hour's lunch-break), will be held at the B.S.I. and there will be a Chairman or discussion leader for each session, with perhaps one or two additional experts present. The programme is as follows:

	1958
14th November:	Engineering workshop practice (metals and other materials).
12th December:	Physical science and technology (including nuclear science).
	1959
16th January:	Building and civil engineering, town planning and architecture.
13th February:	Geographical and regional (especially (1/9) auxiliaries).
13th March:	Management, administrative and social sciences.
17th April:	Biological and medical sciences.

Application and remittance forms are available from the British Standards Institution, 2 Park Street, London, W.1. Telephone Mayfair 9000, ext. 18. A fee of £1 1*s*. for each meeting will include morning coffee and afternoon tea but not lunch and applicants are asked to indicate which meeting or meetings they wish to attend.

Guide to the Patent Office Library

The Patent Office Library has published a four-page *Guide to the use of the Library* containing a plan and brief description of the contents of the library and their location. It should be of practical assistance to all users and can be obtained on application to the Patent Office Library, 25 Southampton Buildings, Chancery Lane, London, W.C.2.

List of Russian Journals

The Lending Library Unit of the Department of Scientific and Industrial Research has issued a new edition of *Titles of current periodicals from the USSR and 'cover-to-cover' translations*, dated June 1958. Titles are listed in Russian script with translations, as in the previous issue, and holdings are shown.

Publications listed may be borrowed direct from the Unit by approved borrowers using Science Library requisition forms. The List may be obtained free of charge from the Lending Library Unit, D.S.I.R., 20 Chester Terrace, London, N.W.1.

NEW MEMBERS

Corporate

Name	*Locality*	*Representative*
Accrington Public Library	Accrington, Lancs.	
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Analytical European Surveys Ltd.	London	Mrs. P. Whyte
Associated Engineering Ltd.	Warwickshire	K. G. Quicke
Australia. Weapons Research Establishment	Adelaide, S. Australia	
Bailliere, Tindall & Cox Ltd.	London	W. R. Kramer
Beirut. American University	Beirut	F. L. Kent
Bradfelt Limited	London	J. Howard
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Brush Electric Engineering Co. Ltd.	Loughborough	G. H. Wray
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Educational Supply Association Ltd.	Stevenage	J. W. Leonard
Electro-Chemical Engineering Co. Ltd.	Weybridge	H. R. Henderson
English Electric Valve Co. Ltd.	Chelmsford	E. B. Callick
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Frankenstein & Sons (Manchester) Ltd.	Manchester	R. A. Hodgson
General Electric Company	U.S.A.	R. J. Booser
Grimsby Public Library	Grimsby, Lincs.	E. H. Trevitt
Hingley, N., and Sons Ltd.	Dudley	E. Wood
Institute of Linguists, The	London	J. K. Creer
Johnson and Bloy Ltd.	London	L. C. Ward
Jolley, J. L., & Partners Ltd.	Great Missenden	J. L. Jolley
Kawanda Research Station	Kampala, Uganda	Miss P. M. Fiddes
Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.	Ijmuiden, Netherlands	P. Veldheer
Mid-Warwickshire College of Further Education	Leamington Spa	H. M. Marklew
Middlesex County Libraries	Hounslow	S. G. Berriman
National Gas Association of Australia	Melbourne	Miss A. Evans
Oxford College of Technology	Oxford	D. L. Smith
R.A.F. Institute of Aviation Medicine	Farnborough	W. K. Stewart
Royal Botanic Gardens	Richmond	Dr. G. Taylor
Sandoz Ltd.	Basle, Switzerland	Dr. W. Bladergroen
Solid Smokeless Fuels Federation	London	A. Burton-Stibbon

Van Nostrand, D., Co. Ltd.	London	E. G. Horwood
Wheat Industries (Australia) Pty. Ltd.	Tamworth, Australia	Dr. J. W. Knight
Williams, J. C.	Edgware, Middx.	
Yale and Towne Manufacturing Company, The	Staffs.	J. O. Sewell

Individuals

Bertie, L. W. H.
Came, Major M. S.
Freed, Mr. Bela
Hoselitz, Miss Suzanne
Stokes, H. M.
Urch, Miss Edith
Vincentini, Dr. A. L. C.

MEMBERS' ADVERTISEMENTS

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

ASLIB invites applications for the post of Head of its Information Department concerned primarily with answering inquiries for technical and economic information. Candidates must have varied experience in specialized information departments and extensive knowledge of British and Foreign sources of information. A University degree, knowledge of scientific and technical subjects, administrative ability and a reading knowledge of one or more languages would be additional qualifications. Salary scale £1,000 × £50—£1,750 p.a., point of entry to depend on age and experience. Superannuation scheme. Apply, naming two referees, to the Director, Aslib, 3 Belgrave Square, London, S.W.1.

ASSISTANT LIBRARIAN AND ABSTRACTOR required in London. Qualifications must include organic chemistry up to B.Sc. standard, good reading knowledge of technical French, German, and some typing. Commencing salary in accordance with qualifications, but not less than £550 per annum rising to £700 after six months' satisfactory service, with prospects for additional increments. Apply by confidential letter to the Staff Manager, British Plastics Federation, 47–48 Piccadilly, London, W.1.

INFORMATION OFFICER aged 25–35 years required by research organization with International interests in the chemical and veterinary fields. Good Honours Degree in chemistry (or pharmacy) required and some knowledge of biological sciences would be an advantage. Duties include supervising staff of technical library and assisting with abstracting, scanning and searching literature and answering technical queries. Pension scheme. Salary according to age and experience. Apply for further particulars to the Director, Cooper Technical Bureau, Berkhamsted, Hertfordshire.

LIBRARIAN: BOARD OF TRADE H.Q. Library in London. Pensionable post for man or woman aged at least 22 on 1st September 1958. Qualifications: Fellowship or Associateship of Library Association or diploma of London University School of Librarianship. Experience of reference or special library work, and interest in literature of social sciences desirable. Salary (men) £550 (at 22) to £655 (at 25 or over) rising to £1050. Promotion prospects. Five-day week. Write Civil Service Commission, Burlington Gardens, London, W.1, for application form, quoting 4887/58. Closing date 9th October 1958.

LIBRARIAN required to develop the Aslib library as a library research tool and demonstration unit. Desirable qualifications: original ideas, a degree, library qualifications, sound experience in administering a small specialized library, ability to abstract literature covering librarianship and information work, some knowledge of languages. Salary scale £900 × £50—£1250 p.a. Apply: The Director, Aslib, 3 Belgrave Square, London, S.W.1.

SEARCHER, male or female, required by Chartered Patent Agents as permanent member of staff. Five-day week. Should have good technical knowledge for extracting information from Patent Specifications and technical literature. Apply in writing stating age, experience and salary required to Carpmaels & Ransford, 24 Southampton Buildings, Chancery Lane, London, W.C.2.

THE DISTILLERS COMPANY LIMITED. INFORMATION SECTION ASSISTANT. The company has a vacancy for a female assistant in the Information Section of its Research and Development Department, Epsom, Surrey. Although based at Epsom, the successful candidate will work mainly in London with the Search Team of the Information Section. Candidates, aged not over 40, must hold a degree in chemistry or a related science, or an equivalent qualification. They must also have a fluent knowledge of German and/or Russian, and the ability to write clear and concise English. The duties of the post are to carry out searches for information in scientific, technical and patent literature, to prepare abstracts and to report thereon. Previous experience of this type of work would be desirable but is not essential. Salary according to qualifications and experience. Non-contributory pension scheme. Write Staff Manager, The Distillers Company Limited, 21 St. James's Square, London, S.W.1 Quote ref. 68/58.

Wanted

Industrial and Engineering Chemistry (Industrial Edition) November 1940. Fifteen odd numbers of same journal ranging from 1938 to 1953 available for exchange, if desired. Offers to the Librarian, CIBA (A.R.L.) Ltd., Duxford, Cambridge.

L'Onde Electrique, June 1957. *Electrical Engineering*, January 1957. The Librarian, Cossor Radar & Electronics Ltd., Cossor House, Highbury Grove, London, N.5.

For Disposal

The following sets of journals are offered free of charge. Please apply to the Librarian, CIBA Laboratories Limited, Horsham, Sussex. *Electrical Review* 1948–54, *Electrical Times* 1955–56, *Instrument Practice* 1952–54, *Machinery* 1955–56, *Machinery Market and the Engineering Materials Gazette* 1950–54, *The Engineers' Digest* 1947–49, *The Industrial Heating Engineer* 1947–49, *The Steam Engineer* 1948–49.

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 10 **November 1958** **Number 11**

THE CONTRIBUTION OF THE NATIONAL LIBRARY TO THE MODERN OUTLOOK IN LIBRARY SERVICES

BY F. C. FRANCIS, C.B., M.A., F.S.A.

Keeper, Department of Printed Books, British Museum

Presidential address, 33rd Annual Conference, Nottingham, 5th September 1958

I PROPOSE to take up your time this evening on what you might call a personal topic. I am going to try to put before you some of the problems that are agitating the minds of those who work in large general libraries and to try to suggest how the work of these libraries and the work in which you members of Aslib are daily engaged tie up together to form the pattern of library services which it is our job to provide.

I have no doubt that to many of you it may seem strange, even anomalous, that a person like myself, who has worked in the British Museum Library for the last thirty years, should have become closely associated with the work of Aslib and why I should be occupying this most distinguished position. When you consider it, however, this apparently anomalous situation has a very obvious explanation. We are all of us in the library business to provide services of a highly specialized kind. During my time in the Museum I have felt that, because of the particular circumstances under which we work in that institution, we tend to do what we feel we *can* do, rather than what we would like to do, and I have found in the work of the special libraries a stimulating example of how library services can be developed, provided the conditions are right. Putting this in an entirely different way, it has become clear, particularly in the circumstances of wartime and in the immediate post-war period, during a time of unexampled scientific and technological development, that libraries are not merely repositories where information lies ready for people to find, but are active instruments in the development of thought and the moulding of policy. Through the work of Aslib, the active part that can be played by libraries has been made clear, and its development has been encouraged. This is not to say, of course, that firmly and deeply based institutions should remould their policy overnight, or that their work is the same as that of the special libraries. What should be clear, and it has certainly been clear to me and a source of inspiration, is that the services which libraries can give are more vital, more positive than had previously been realized.

It is essential, in my view, for the great libraries to give careful consideration to their place in the modern world and to consider how far their policies have to be modified. I wish that I had been able to give this address in two or three weeks' time, because I should then have been able to report to you the results of an important meeting in Vienna of European national librarians who are considering the role of the national libraries in the present world. That, however, is impossible, and I can do no more than say something of my own view of this problem and my own ideas on what developments I would like to foresee and how I think the great libraries fit into a pattern of library and information service.

Perhaps I might say that I couple these two words library and information together deliberately. Much discussion has gone on about the meaning of these words and the scope of the ideas they imply, and on the relative importance of the librarian and the information officer. It may very well be that the discussion has had the effect of bringing into sharper light than might otherwise have been the case the type and quality of work which is demanded from those in charge of the sources of information. I hope, however, that it will be possible one day to bring an end to the contention which this discussion has aroused. I feel no doubt myself that, to carry out his job correctly, the librarian needs to be as much a specialist as he or she can, and that, other things being equal, the more specialized knowledge a librarian has the better he will be able to meet the needs of his clients. It is also true that the techniques and the practices which have been worked out by librarians are equally useful for information officers. For myself, the distinction between the two is meaningless in principle, though I am sure we should all agree that there are degrees of development in library work and information work and that both the librarian and the information officer are learning all the time about the possible developments of their craft. I hope that we shall wake up one morning and discover that the perfect special librarian and the perfect information officer are really one and the same person.

All this has some bearing on my approach to the problems of my work in the British Museum. We are called keepers of the collections because our primary duty has always been considered to be, and is in fact, the preservation of what has been deposited in the British Museum. Preservation, however, is not our sole function, that of making the collections available to students is a parallel function which has equal importance with that of preservation.

I wish it were possible to say that the British Museum had provided services specially planned to meet the current demands on libraries, and you must forgive me if I seem to be merely promising and not reporting. Equally, I must ask you, when I tell you of the difficulties which lie in the way of developing library services in the Museum, not to think that these difficulties are looked upon as insurmountable or as excuses for inaction. They are factors which have to be taken into account at the present time but I would not, I think, be occupying the position I occupy this evening if I did not confidently believe that these difficulties can, in the appropriate circumstances, be removed. It is my hope that in the course of the next few years we shall be able to lay the foundation of a new library service which will put the British Museum, in the modern world, in the place it occupied in the world at the end of the nineteenth and the beginning of this century. It is a hard fact that, apart from the provision of additional storage space, it has not been possible, broadly speaking, to develop the facilities available for readers since the Reading Room was constructed in 1857. We have indeed a special reading room for newspapers and we have small special reading rooms for state papers and maps, but it is true enough to say that, with the type of building and the present layout of the British Museum, very little development in the way of special facilities for readers has been or can be realized. Had there been, there is no doubt that we would have provided very much better accommodation for the special reading rooms we have at present, the State Paper Room and the Map Room, and we would have provided a special reading room for periodicals—this is one of our most crying needs—a special catalogue and bibliography room, and at least one special reading room, for music.

It should not be thought, however, that this represents the sum total of my personal views as to the need for decentralization in large comprehensive libraries. I feel very strongly that the biggest difficulty in the way of the full use of libraries like the British Museum, the Library of Congress, and the Bibliothèque Nationale is the mere size of the collections. It used to be said of a good librarian that he knew every book on his shelves and that he himself was the best guide to the literature he controlled. This ideal is still, I hope, maintained by librarians in special libraries. They should consider themselves fortunate that they can still expect to know all the books under their care and discuss their contents with their readers. In the case of the large comprehensive libraries, especially when they contain books to the number of five or six million, which represents the collections in the British Museum, the librarian can no longer claim to know all the books under his care. He may know some of them very well but, for the most part, he will be forced to deal with the material under his care much as the general manager of, say, Harrods or Boots might have to deal with the stock in any one of the multitudinous sub-departments which such a concern contains. This is a pity, because it has, to my way of thinking, two undesirable effects. In the first place it takes his confidence away from the librarian. He is no longer master of all he surveys; he is no longer the person of whom it is said, 'Ask So-and-So, he knows all the books in the library and will advise you which ones to use'. In the second place, the user of the library is also overwhelmed by the mass of material which is at his disposal. Unless careful guides are provided or some other means is adopted of rendering the collections more manageable he is at a loss and tends to give up the ghost and he transfers his attentions to other libraries where he feels more able to get to grips with the literature in which he is interested.

Now considerations of this kind, if they were allowed to dominate one's approach to the large comprehensive library, could spell the end of such libraries as anything but museums of books, where the past but not the present can be studied. If one were to follow out this line of reasoning then it would clearly be undesirable for the great libraries to bother to buy new books as they came out; they could wait until other libraries had finished using them and simply invite out-of-date books to be deposited, which is obviously absurd because any such system could result only in an unorganized and haphazard collection of books. So the great library continues to buy modern books and it buys them, and acquires them by many other means, in a variety and in numbers beyond the means of any other library in the country.

It is therefore obviously necessary, in view of the considerable expenditure of money and the great amount of administrative work involved in all its operations, for the great library to consider what means are available to ensure the full use of its collections. Here the work carried on by the special libraries can provide, in my view, a useful guide. The special library usually deals with a small, even minute, subject by comparison with the range covered by the comprehensive national libraries. Its librarian knows the material under his or her care; the reader approaches it with confidence and with the assurance that he will find what he wants speedily and conveniently. Is it possible to apply this principle to the great libraries? Can their work be sufficiently decentralized to allow ready access by the public and to make it possible for the librarian and user to recover their feeling of confidence? It would clearly be foolish to suggest that the Museum could set up special departments for all the special collections which make up its total holdings. One of the first addresses I ever gave to Aslib—it was I think in 1946—was concerned with this aspect of the Museum's work. It is likely that the holdings of almost any special library could be matched in some respects by the collection in the Museum. It is clearly impossible to consider specialization on this scale but I am sure that much could be done by breaking the collections up into a number of separate subjects, each with its special staff, each with its own catalogue, each with its own reading room and collection of reference books. I am not sure that professional thought is at one on this subject, but personally I consider decentralization to be the only way in which the great collections can come into their own again. It must not be forgotten that, even if the collections were broken down into ten such divisions, each division would consist on the average of over half a million books, which is, I suppose, double the size of almost any of the university libraries except those at Oxford and Cambridge and London. Our library thinking tends to be both conservative and parsimonious. We are all inclined at the bottom of our hearts to look upon a library as a luxury provided for recreation and delectation. It is, however, an important national asset and our duty is to see that it is used to the full.

It should not, of course, be thought that this suggestion has the ulterior objective of doing away with, or taking the place of, special libraries. Their purpose can only be fully realized if they are intimately concerned with a particular activity and able to assess and meet the day-to-day needs of known individuals, and if they are supported by wide and deep national collections. The activities of the special library are largely concerned, I would suppose, with an active aggressive use of information. This has always been the feature about the work of a special library which has most appeal to me. I want that approach to be adopted by the separate sections of the great national library but they will be acting for a different kind of use. They will be planning their activities along a broader front and will not be able to anticipate the needs of Mr. X or Mr. Y but they will try to provide well-organized comprehensive collections in certain broad subject fields.

It will follow that if it is possible to organize this kind of breakdown in the library services in a library like that of the British Museum, those in the special sections will have a duty to be aware of the work which is being carried out in other libraries, including, of course, special libraries, in their field, and I hope that the day is not too far distant when the staff of the British Museum Library will be able to play a full part in helping to co-ordinate such library activities.

The idea of comprehensiveness in a single library is also one which has to be re-examined in the light of modern developments and modern requirements. The pattern for national library development was set, I suppose, by our illustrious predecessor, Antonio Panizzi. He set the aim of the British Museum to provide for the poor student the best library of the literature of any country outside the country itself.

It must be admitted however that when this pattern for the development of the British Museum was laid down, library studies were very different from those undertaken today. Then the library was, so to speak, the humanist's laboratory and the scientist's key to the knowledge of the past on which he tended to lean for the development of his thought. Neither one was so much concerned with using a library for current reading. Indeed, it is more than probable that any scholar worth the name had access, at home or in other quarters available to him personally, such as a club, to all the current literature he found it necessary to use. It is only in more recent times that the tempo of scientific research has speeded up in such a way as to make speedy access to comprehensive collections of periodicals, reports, abstracts, etc., essential. It cannot be denied that in this particular respect the great comprehensive libraries have been slow to appreciate current needs and have fallen sadly behind in providing what is required. They are essentially humanist in outlook and it is inevitable that where science and technology are concerned they have been late starters in the effort to provide satisfactory library services. Not only were they late starters, their staffs were and are, for the large part, unskilled in the subjects dealt with by scientists and technologists, and the idea of employing specially qualified scientific staff is one which has only recently been fully appreciated. The vacuum thus created has had to be filled by resources outside these libraries and in many instances special libraries for science and technology have been created which carry out some of the tasks which are proper to a national library. In this country the growth of the Science Library, particularly under Bradford and Lancaster-Jones, clearly showed what could be done in the scientific and technical fields which were untouched by the British Museum. Unfortunately the vision and the energies of these two men were baulked by lack of adequate space and adequate funds and, I suppose, by the lack of the right kind of official support. None the less their work formed a courageous attempt to provide material for an ever more important body of users whose needs had not been taken into account by the existing national libraries. In recent years a new attempt, this time with official approval, has been made to tackle the problem and to provide some of the services wanted by scientists and technologists, and the proposal to create out of the present Patent Office Library a new National Reference Library of Science and Technology has won official approval. Similarly, a new National Lending Library for Science and Technology has been begun under the auspices of the Department of Scientific and Industrial Research. The planning and development of both these libraries will form a most important feature of library thought during the next five to ten years. There is every reason to think that both have been conceived along the right lines and I hope that their development will be equally praiseworthy.

The creation of super-special libraries however does not really solve the problem with which I have been dealing. In the case of science and technology it can be argued that there is real urgency about the need for a comprehensive service. It can also be said that the group of subjetcs covered by the description 'science and technology' is sufficiently distinctive to be capable of being separated from the comprehensive national library. It can further be argued that the type of library service which has become associated with books in these classes is different and more urgent than that which has in the past been found from national libraries in general and, in this case, the British Museum in particular. It is clear however that, once this movement towards the creation of special institutions for particular subjects has started, it is only too easy for it to be extended into other fields. I cannot help regretting, despite my confidence in the schemes which are now going forward, that means were not found of bringing the new science reference library into close relation with the British Museum. (I have to be careful here lest I seem to be arguing for the *status quo* regardless of the interests of users. In fact the exact opposite is the case.)

The amount of money set aside for library provision in almost any country—perhaps excepting the United States—is ludicrously small. It is important, therefore, that the money available should be expended rationally so that it can have the maximum effect. It is easy to see how, if several large specialized libraries are created, the resources available for library development could be squandered on the duplication of administrative services, the duplication of fringe material, to say nothing of the duplication of major works of reference. Let me explain emphatically that I am not against duplication, triplication, quadruplication, quintuplication or any other degree of multiplication of copies of books where this is necessary. What I am concerned with is the danger of wasting the nation's resources—perhaps not that so much as wanting to ensure that the maximum results are obtained from the amount of money available. Library services are not cheap, especially if they are conceived on the lines I have been hinting at. We librarians must have a mature appreciation not only of our immediate tasks but of their relation to the country's economy. We must not be afraid of asking for sufficient money to carry out work we consider essential: but we must equally see that such money is not wasted. Not all librarians are good business men: but the provision of library services at the national level calls for a strict appreciation of economic factors and careful planning in the use of available resources. I want to make this point to you most strongly. I have said many times that with the present growth of literature and the present demands that are made on libraries no library can look upon itself as being self-sufficient. It is absolutely vital that libraries should co-ordinate their efforts in providing the best possible overall library service. There is surely some hope that this can be accomplished. Librarians form a well-organized community; they have on the whole fairly liberal notions about the carrying out of their craft and they are very well seized of the need for careful planning and of co-operation.

This brings me to a number of considerations regarding the great national libraries which demonstrate conclusively, to me at any rate, that such libraries are an essential feature of the current library service of any country. I may say by way of introduction that I have seriously wondered from time to time if the day of the large comprehensive library as anything except a store-house of older books and periodicals was over, and if the main burden of bibliographical and information work should not be handed over to smaller, highly organized special libraries. A moment's thought however is sufficient to dispel any such idea. First the National Library, while it may fall far short of the ideal in certain subjects—particularly, as I have already pointed out, in the field of applied science—nevertheless acquires by copyright deposit, by purchase, by gift and by exchange ranges of publications, particularly of universities and learned institutions from every part of the world, which are not matched elsewhere in the country. It acquires books and periodicals in many out-of-the-way languages—if such an expression can be forgiven—which are not and could not economically be covered in other libraries. The National Library has staff with language competence and it has moreover a recognized position in the eyes of foreign institutions which renders it the natural place to which to send out-of-the-way books in all subjects. It is or should be the main centre for the publications of governments and government agencies. It would clearly be impossible on grounds of economy alone to multiply the number of institutions receiving such publications in bulk with the considerable cataloguing and storage problems which they involve.

I have said enough I hope to make this point. There is another which must not be forgotten, the National Library is the only library with an obligation to maintain and preserve its collections. It would be difficult, if not impossible, to spread a responsibility of this kind among a number of institutions. Remember also that the National Library is often the only institution in a country which can provide detailed information on the thousand and one subjects for which no specialized library exists.

With such collections flowing naturally into the National Library and forming a vast reservoir ready to be tapped, it would be absurd if they were not used to the full. The problem is, as I have already indicated, to find the means of drawing on this reservoir effectively and in a manner to meet the requirements of the day. The great libraries need to regain the confidence of the specialists and the special librarians, whose main requirement is ease and speed of access. I have indicated previously how I think this might be obtained.

I am not suggesting for one moment that the national library can replace or supplant the special library, nor could it engage in the kind of detailed work which is typical of the special library. However greatly its collections can be decentralized the large library could not possibly maintain the close personal, daily contact with users which is one of the main features of the work of the special library. I do seriously suggest, however, that special librarians have a duty to their clients to make themselves familiar with the additional material which is available in the great collections. Inability to lend (where such is the case) is, I know, a serious obstacle, but this should not affect the obligation the special librarian has to see how he or she can help the library user to develop his work by access to all sources of information.

I am coming now to another important consideration. If it can organize its services in such a way that it can effectively supplement the services of the special libraries, what should the National Library expect of the special librarian? First, that he should be fully informed of what is available on a particular subject beyond the sometimes sketchy material on his own shelves, and that, if necessary, he should be willing to take a certain amount of trouble to find it. Even more important than this however he should be ready to adopt a realistic and not an ivory tower approach to library problems and should be prepared to co-operate in schemes for the general betterment of information services.

I have said already that this should not be difficult to bring about seeing that librarians are on the whole a thoughtful, well-informed body of men and women who have a clear idea of the information needs of the modern world and the complex problems that arise in trying to provide for them.

You may wonder whether the picture I am beginning to sketch is not altogether too idealistic. It has undoubtedly elements of idealism in it and I am only too well aware of the need, especially perhaps for librarians, to temper easy idealism with strong doses of realism, but it is remarkable what *can* be accomplished if the goal is clear and desirable and if the determination to reach it is sufficiently strong. Let me tell you why I feel optimistic about the possibility of bringing about a great improvement in our library services and in co-operation between ourselves—whether in special libraries, information centres, university libraries or general libraries.

First of all the climate of opinion is more favourable than it has ever been. I do not mean only that the government seems to be becoming fully aware of its interest in having a satisfactory library service in technology, industry and commerce; librarians themselves are thinking more widely of all that their work implies: its scope, its limitations, its potentialities. In the world of national libraries I am very much struck by the appreciation of the need to reorganize services so as to bring them into line with modern requirements and indeed to examine the whole basis on which the idea of the national library is founded. There is a deep understanding of the absolute necessity of collaboration between libraries of all kinds if the library and documentation services which the modern world requires are to be developed.

To come to a more important and a more practical point it is the intention, as you know, to provide a completely new building for the British Museum on a site adjoining the present one. With the opportunity thus provided the type of planning I have mentioned above could become a reality provided we are wise enough to take advantage of the time to plan ahead. After all, Panizzi's ideas, enunciated in the 1850s, provided the basis for a pre-eminent library service in advance of the times for fifty or sixty years. I am personally convinced that the opportunity for re-planning has come at absolutely the right time: at a time when our thought has been stimulated by the challenge of the present and the future, and our ideas are crystallizing into a pattern which seems to correspond to the requirements of the time. A new, properly planned building will release energies which are at present bottled up and stifled.

If the stage is properly set the principal actors—in this case the heads of the various sections of the National Library—will have scope to develop their ideas and work in closer co-operation with their colleagues in other libraries. I regret very much that collaboration between the staff of the British Museum and the staff of other libraries in fields other than bibliographical has not been much more developed. Here I hope that the measure of decentralization which I have suggested might bring my colleagues into closer touch with others in specialized fields.

This is desirable not only on general grounds but also because I envisage the library and library staff playing a much bigger part in helping to develop library services based on the energies not only of the staff of the British Museum but on other libraries as well. We have not really begun to scratch the surface of the bibliographical work required to unloose the information which is under our care; the services we provide are ludicrous in comparison with what is needed. A beginning has been made during the last few years with the *British National Bibliography, BUCOP, The British Catalogue of Music,* the *Union Catalogue of Old Music,* the *B.N.B.* card service, and I hope, next year, the new edition of the *British Museum Catalogue*, to speak only of projects with which I have myself been associated. There are still unfulfilled needs for special catalogues, special bibliographies, union lists, catalogues of the contents of periodicals, co-ordination of abstracting services, methods of filling gaps in our holdings of specialist periodicals and literature of all kinds. This is work in which the National Library and other libraries can play joint parts, and it is my hope that the efforts of special libraries can be supported and co-ordinated by an active central national library.

It is difficult to outline the kind of plans I have been talking about without seeming to suggest either that I am trying to gather all bibliographical activity into one institution or to regiment the activities of all other libraries. Nothing could be further from the truth. My purpose is to see what means can be found to use the undoubted power a national institution like the library of the British Museum possesses to solve the immense bibliographical problems with which we librarians are faced.

Valuable bibliographical and information work is being done in a thousand places up and down the country. Frequently the same work is being done by many different institutions at the same time. Aslib has done a wonderful job in providing a meeting place for the discussion of ideas and methods and in fostering the work of the special libraries; it has not the means to supply the overall plans in which our various efforts can be co-ordinated for the betterment of the bibliographical service of the country as a whole. This it seems to me is a task which should be placed on the shoulders of a national library—or the national libraries, if there are several.

This is the ideal which I have long cherished. I have always felt proud to belong to the British Museum. After all it did not gain its reputation for nothing. I have equally felt that I wanted it to play in the modern world the outstanding role it played in the nineteenth century, not for self-glorification but because I think the country needs it.

THE SCOPE AND USE OF ECONOMIC INFORMATION

33rd Annual Conference, Nottingham, 6th September 1958

THE Chairman, Mrs. E. E. Stowell (Courtaulds Limited), in introducing Mr. Hutber, said that she must apologize on behalf of the Economics Group for bringing the audience so early in the morning into the urgent world of the economics information officer and librarian. By urgent she meant that they had to be so organized that they had at their fingertips information on any political, social, trade, industrial or scientific developments throughout the world that might have any bearing on the work and well-being of their respective institutions.

Mrs. Stowell said that she would leave other speakers to indicate just how far their interests spread. She wanted only to explain why their programme had taken the shape in which they were presenting it. In thinking over the scope of their work they had felt it necessary to find, as it were, the centre of their circle, and they had agreed that *The Financial Times* presented them with the most complete service of up-to-date facts and careful comment on which to base their own services. They had therefore asked Mr. Hutber, of the industrial staff of *The Financial Times*, to explain to them exactly how it managed to produce such a comprehensive and satisfying record of world affairs: a record, she would add, which, apart from immediate use, helped to form most valuable history files.

After Mr. Hutber had spoken they would hear from three other people representing a good cross-section of the Economics Group as to how they used the information put out by his paper.

THE FINANCIAL TIMES[*]

BY P. HUTBER

Industrial staff of The Financial Times

Mr. Hutber said that he had decided that the most useful approach to his subject was the organic approach—the newspaper as a balanced and consistent whole. The job of a newspaper was to record, report, interpret and entertain. It was distinguished from an encyclopaedia or year-book by its contemporary nature, being concerned with the news of the day. To understand what a newspaper contained and why it contained it the reader had to ask himself for whom it was written. In the case of *The Financial Times* it was for the man of affairs whether he was a captain of industry, a small investor, a rising executive, or somebody who wanted to know what was going on in the financial world.

The back page gave London closing prices—the basic information required by the investor; but if additional information were needed to make those stern figures comprehendable, so that one could know why oils were up and textiles down, one found oneself extending the scope of inquiry. First, one needed as much information as possible about the state of the market and the condition of the various companies concerned, and then about the behaviour of various commodities and the state of things in the countries producing them. One needed to know about overseas exchanges, particularly New York. But all that was merely a beginning. One wanted to know how prosperous a particular industry was, and what technical, scientific and marketing changes were in prospect; what was the general state of the economy and how it would be affected by current Government policy.

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[*] Abridged report.

Then there was the political outlook—the labour scene; was it one of wage stability or inflation all the way? What was the long-term international outlook from the point of view of the market? What repercussions would there be to the choice of a new Prime Minister in South Africa?

That was how what had started as a City paper had grown until it contained more industrial news than any other paper in the country and more news of the application of science to industry than any other paper in the world. It published over thirty daily features and nearly thirty weekly ones.

In regard to recording information—the first of the duties he had mentioned—the company meeting reports were one of the basic services of the paper. They placed on record the chairman's views on his particular company, so that over the years there was a complete week by week, month by month and year by year picture of the state of British and overseas industries.

Under the heading of recording information also came law reports, Parliamentary reports, the announcement of appointments, advertising news, awards of contracts—which was a field where public relations impinged most strongly on the news.

Reporting covered a multitude of sins—stock exchange news, such as closing prices and the dealing list, the Monday list giving rather more details as to yields, the list of active stocks, dividends announced, and new issues. Then came United States and Canadian stock market reports and news from the Australian, South African and continental bourses; market reports, commodity news and commodity price changes, most of which information was supplied by specialized sources and then checked and collated in the office. Then there was financial news, concerned with the money market, foreign exchanges, forward rates and cross rates. Next came industrial news—something which was more easily recognizable by the ordinary man as the stuff of a newspaper. It was a fascinating and challenging field of work. In order to compile an industrial story one had first to have a basic knowledge of the industry concerned and a certain acquaintance with the statistics, or at any rate a knowledge of where they were to be found.

Labour news required many of the same qualities but there was a much stronger emphasis on the characteristics of the individual trade union leaders.

As for scientific development, this was not a subject about which he could say much, because there was no substitute for a good scientist in this type of work—and that was what *The Financial Times* had in Derek Wragge-Morley. His job was to provide information as to what was happening in the scientific field as it impinged on industrial news.

Economic news was a category which could not be confined to any one heading. It might be dealt with by the political staff, the money market people, or the financial staff. Very often it was tied in with the industrial department as part of the industrial scene.

There was no mystery about political news. They had a Parliamentary Correspondent and a Political Correspondent, one sitting in the gallery of the House of Commons and the other in the lobby, gaining, one hoped, the confidence of the Whitehall departments and the Treasury, besides that of individual Ministers.

For foreign news there was the normal news agency service supplemented by permanent correspondents in New York, Bonn and Paris and more than fifty part-time correspondents in other parts of the world.

As for interpreting the news, there was a certain advantage in being an independent paper. The first people to try to put some sense into the news were the various correspondents, plus the special correspondents dealing with oil, shipping, mines, diplomatic affairs, etc. Then there were the columnists—the experts in money and banking—Lex, the page one columnist, dealing with company and stock exchange affairs; topic writers writing about individual company reports; and Harold Wincott on Tuesdays dealing with world affairs as he saw them. Also there were the leader writers whose job it was not to tell their readers what to think but to tell them what the paper thought.

The features could be of a number of types. They could be highly topical or could take the form of a piece of research into a particular industry so as to indicate how it was getting on and what were its problems and achievements. Special articles were commissioned in which the reader had the chance to see a highly distinguished, academic mind at work and to be put into touch with the latest economic thought. Finally there were the articles by captains of industry—important not so much for what was said but as representing the views of an important man.

The Financial Times was faced with the enormous task of trying to put this mass of information into a palatable and readable form. Perhaps the most important exercise of the editorial function was to give the paper a consistent lively and honest character.

The library had been first developed primarily for the staff, because nobody could do anything without an immediate, quick and reliable service to give the background and past history of any item. It answered about 30,000 queries a year, of which no less than 11,000 came from outside.

The first problem which the handling of all this material raised was the question how much of it should be kept, from the point of view of the regular reader There was no substitute for the informed judgment of the librarian. *The Financial Times* did not publish an index though it kept one itself—a fact for which it was fairly often cursed—because there was not the least hope of doing it economically. An index was a bad substitute for knowing where something was.

The basic distinction to make was between the obviously topical feature, which merely gave the background of the morning's headline, and the piece which represented fundamental work in industry or was concerned with economic problems.

The final question was concerned with the extent to which *The Financial Times* could be said to reflect City opinion. He had mentioned that the newspaper was an independent one. The important thing to remember was that there was no such thing as a City opinion; it was another great British myth. There was no coherent body of men who thought the same things; there were a lot of individuals thinking a lot of different things, many of them mutually contradictory. The *Financial Times* claimed to state those things about which the City was thinking and to represent faithfully the views of the various groups, doing so perhaps for the non-expert and perhaps for the expert.

USES OF *THE FINANCIAL TIMES*

BY MEMBERS OF THE ECONOMICS GROUP

MR. P. SPIRO (Librarian of the Institute of Bankers) said that the larger banks and finance houses possessed economic intelligence departments which varied considerably in size, scope of work and status within their organization. Economic and financial periodicals and newspapers were extensively used in these departments and the normal procedure was to file cuttings under country, commodity and industry headings. Only a few of the departments compiled selective subject indexes and, with the emphasis on the bank's immediate business interests, the files did not usually go back more than one or two years.

One of the functions of the library and information department of the Institute of Bankers was to act as a central reference source and information clearing house of economic and financial material. It was used not only by individual members of the Institute but also by the various departments of the banks—in particular by the economic intelligence departments and the individuals responsible for information work in the smaller banks—by the Press, other institutions and libraries, and the public at large.

Their reference library was particularly strong in bound sets of many economic and financial periodicals and newspapers, including *The Financial Times*, and information files were built up on a large number of subjects. Although it was a secondary source they found *The Financial Times* extremely useful as a record of domestic and overseas financial news, exchange rates, prices and appointments but he regretted that unlike *The Times* it published no index. The feature articles and 'Lombard's' regular column were always very topical and frequently dealt with subject matter that in its original form was not readily available to inquirers.

Mr. Spiro went on to describe how his department recorded and retrieved this type of information. Each morning newspapers and periodicals were marked up and a *Daily Information Abstract* was prepared. This daily abstract kept the administration and information staff informed about publications and work outside the Institute of interest to them, and it also ensured that periodicals of which only one copy was taken were promptly available for reference in the members' reading room.

The *Daily Abstract* was also used as a guide for the selective subject indexing and cutting of periodicals and newspapers. At the end of each week the abstracts were marked up, using the library's own subject headings classification, and sheaf catalogue slips were typed and filed away in an information index which was used in conjunction with the library's subject index to books.

The information index and the sets of the daily abstract were invaluable aids when it came to preparing special reading lists such as the recent International Banking Summer School bibliography, the *Recent Articles of Interest* section in the Institute's Journal and the *Monthly Library Lists*, a library and information bulletin each of whose issues was generally devoted to a particular topic and which had a wide circulation among the Institute's local centres, bank departments and other libraries and institutions.

MRS. P. A. BENSTEAD (Esso Petroleum Company Ltd.) said that *The Financial Times* was one of the sources of information used by the Chemical Market Development Section of the Esso Petroleum Company. This paper had come to be respected because it so often provided the first news on matters of importance. Information on new units, production figures, new products, new processes and company reports gave material which greatly helped the work of the section to keep abreast of events in the chemical industry.

Cuttings from *The Financial Times* and other papers were circulated once weekly and a monthly news bulletin was compiled from them. They were retained in files under subject and country headings and data thus available provided much assistance to the Market Development Manager as a starting ground for any survey of a particular market.

The use that the Chemical Market Development Section made of *The Financial Times* was only one aspect of its use in the company. Other departments would glean information from it which they would use according to their interests. What was important was that *The Financial Times* would be the prime source of economic information throughout the company.

MISS FREDA CADLE (The J. Walter Thompson Co. Ltd.) said that the J. Walter Thompson Company was an international organization with fifty offices and agents round the world. Her department prepared reports on markets and on economic and business trends and developments for their overseas offices as well as her own.

Their account representatives had to be informed at once of anything affecting or likely to affect their particular clients or competitors. This included not only news of products and advertising but anything affecting the climate of business. The senior marketing men needed all this but in addition everything relevant to the markets of the products handled.

Most of their clients were manufacturers of branded products but some provided services; others were bodies of producers or traders. Then there were clients like the Stock Exchange Council—*The Financial Times* was vital here—who needed public relations counsel rather than advertising know-how. So theirs was a mixed public and they had to be ready with information on such a wide range of subjects that their immediate knowledge on any one must be comparatively superficial. If they could provide a short answer authoritatively to put their people in the picture immediately, and know the sources for a fuller answer if required, all was usually well.

And that is where *The Financial Times* was such a standby.

First, in a general way. It was eminently factual and non-political.

The Financial Times' supplements were a gift to her department. They were full of facts and figures and there were first-rate articles on nearly every aspect of the industry covered.

The news summary was just enough about world events that did not concern Thompson's to keep her *au fait* if she had no time to read more.

On the front page, too, there was often a chart that she sent to their art director on the Economist Intelligence Unit who recommended *The Financial Times* charts as models for their artist.

'Lex' demanded more than a glance to see whether any clients or competitors were mentioned—not infrequently he had praise or sometimes criticism of the Stock Exchange Council, or a reference to be added to the files on the improvement of company reports.

If occasionally they needed any movements in prices and the *reasons* for them the second page was the place to look.

News of international fairs and exhibitions was neglected by most daily newspapers but not by *The Financial Times*.

The company reports, chairmen's and financial statements were a mine of information. Some were sent first to the marketing men working on the industries; these and many more were filed.

Many leaders and feature articles would be sent before filing to an account executive or perhaps to the marketing specialists if a broad trend was discussed or figures quoted. Feature articles on distribution, voluntary chains or supermarkets were valuable sources of information. The publication of an article on Investment Clubs helped the Stock Exchange to gauge the 'acceptability' of this new movement. A recent article on sewing-machines helped them on an assessment of the market for one of their European offices. One on sugar, backed up largely by information from *The Financial Times* library, went to another European capital.

It was sometimes difficult for them to get a picture of the structure of an industry in a hurry and *The Financial Times* feature articles filled important gaps there.

Mark Abram's occasional articles on advertising or market research were welcome, particularly as a handy summary or collection of facts that were probably available but scattered round the building. Government regulations were summarized most clearly and with just enough detail for account representatives.

The daily appointments and the half-yearly honours lists were read to see whether anyone was to be congratulated, and 'Travelling' went every day to the contact man on Pan American Airways and United States Lines. He also had the weekly Aviation and Shipping Notebooks. These regular 'Notebooks' were very interesting. Travel notes went to the representative on a touring agency. Advertising notes went to the chairman and managing director. Science notes and news were admirably slanted towards industry; new products and developments in America and Germany must all be watched.

The World Value of the Pound was put on the noticeboard every Tuesday and provided the quick answers to more questions than any other clipping they made.

Lastly there were the advertisements. Her department must have available representative advertising of competitors of all their clients and examples of advertising in virtually every field. *The Financial Times* was the only London newspaper, except *The Times*, that carried advertisements addressed to the higher executives—industrial machinery, office equipment, services and those experts in advertising whose advertising of their own expertize was strangely rare—the advertising agencies.

DISCUSSION

MR. GEOFFREY WHATMORE (British Institute of Management) wished to comment upon the question of the indexing of newspaper articles. Almost everyone would agree that exhaustive indexes were needed in respect of newspapers; it was also obvious that they would not get them because it was not an economic proposition. Newspapers existed to make profits and would not publish indexes which, however valuable, were going to need subsidizing in some form or other. They had an index to *The Times* which was first-rate, but he had it on good authority that *The Times* Index did not make money.

If they were ever to have any form of newspaper indexes it was up to some outside body to produce them. Although exhaustive indexes were out of the question a good deal might be done by selective editing by specialist bodies. Two sorts of approach might be made. First, there could be indexing by subjects, and interested bodies might well find it worth while to produce weekly, monthly or quarterly indexes from the national Press as a whole. He was thinking of a subject like international affairs. Up to a year ago Nottingham University was producing a subject index of periodical and newspaper articles on international affairs and a similar index could be based on economic problems.

Another approach was to index selectively by type of news. The 'hard' news of the day was fairly well catered for by *The Times* index and other digests and special publications, but an index of feature articles was needed in respect of the daily Press. In *The Financial Times*, *Manchester Guardian* and *Daily Telegraph* many worth-while articles on current topics appeared, which one read and then remembered only vaguely, only to find about two or three weeks later that one needed to refer to them. There was no key to the tracing of such articles.

Not long ago he had been concerned in a proposal to produce an index of feature articles which appeared in the national Press but it had not found sufficient support amongst librarians and newspapers to see the light of day. He would like to hear from interested members whether they thought there was any feasibility in producing some kind of selective index and whether they had any proposals in regard to the support of such an index. Would they consider subscribing towards the cost of it?

MR. SPIRO, replying, said that the essence of the matter was speed. To be really useful this form of index had to be up to date. He could envisage a number of snags about a combined work of the type suggested, which could be published only periodically and even then would chiefly depend on the co-operation and support of precisely those special libraries and information departments which already prepared their own internal index to newspaper articles, concentrating on the subject matter of interest to them, and would, therefore, least need the type of index proposed by Mr. Whatmore. That was not to say that direct co-operation in this field should not be encouraged.

The CHAIRMAN said she thought they might get some co-operation between members. She did not know whether it would be possible to make a note that such-and-such a library had an index on such-and-such a subject. Her organization might be able to help on the textile side and perhaps others could be of similar help.

MARKETING RESEARCH

BY W. A. COOPER, M.A.

Commercial Research Department, I.C.I. Ltd., Paints Division

33rd Annual Conference, Nottingham, 6th September 1958

INTRODUCTION

YOU have all doubtless heard the old assertion that 'There are lies, damned lies, and statistics', and many will also be familiar with the definition of the economist, as the man 'who argues from false premises, with fabricated data, to arrive at a foregone conclusion'. Since 70 per cent of the artistry or science of marketing research derives from those two disciplines, as the administrators of the information services of the country, you have every right to an account of what we, in Marketing Research, are up to.

One of the difficulties with marketing research, in the popular understanding, is that people in industrial firms tend to think of it in terms of industrial surveys, whilst those concerned with selling to the retail market think, primarily, in terms of consumer surveys, and those in advertising agencies possibly think first of advertising research, readership surveys and the like. Each is familiar with his own firm's or institution's interest and so holds rather a narrow view of marketing research.

I want to present a picture of marketing research as the research function in regard to marketing problems whether they arise from product design, production, selling, merchandising or publicity. To do this work the market researcher has a toolbag of techniques and his objective is always to provide information to solve marketing problems so reducing the area of personal opinion or judgment which is otherwise necessary in preparing marketing programmes. We do not usually find that any one particular tool or technique is automatically satisfactory for solving a particular type of problem; usually the use of a number of techniques in a combined exercise is necessary.

I would like to review with you the main techniques commonly used illustrating their particular use, briefly how they operate and where possible giving examples of their practical value.

INDUSTRIAL SURVEYS

By industrial surveys I mean investigations into the market for a product which is sold to industry usually as an intermediate product for manufacture into a consumer article. The objectives of an industrial survey are usually to assess the size of the market, the products and processes used in the market, the major manufacturers in the industry, competitive shares of suppliers in the industry, geographical distribution, technical and commercial developments, and production trends over the next five years. Overriding all these objectives however is that of finding out how the sales of one's own firm can be increased.

The method usually employed is for one man to tackle one job. This allows him to become familiar with the technical jargon and methods of production in the industry. He becomes a marketing specialist for that particular field during the time of the survey.

Each survey would normally begin by collecting information from internal sources, from the company's sales staff, records and library. This is simple and straightforward but in passing I would like to pay tribute to our own library service for without them it would certainly not be easy. Almost at the push of a button they are able to provide a deluge of useful material gleaned from all quarters, sometimes on the most unlikely subjects, and provided, moreover, in a matter of hours or a day or so at the most.

Having gathered internal information the next move is to seek help from trade associations, the trade press and Government departments—all of which may be able to give information which is helpful to the survey—and from there the surveyor proceeds to visit customers and non-customers who are manufacturers in the particular trade. How this work is done depends on the industry concerned. With a large industry such as the building trade a sample would be taken, but with an industry like the motor industry, where five or six firms account for 90 per cent of the total output, data would be collected on all the firms. In each case the surveyor speaks to responsible and well-informed people who can furnish reliable facts or opinion as the case may be.

One of the most important things in this sort of research is being able to assess qualitatively the value of the information provided. I remember asking my tutor on one occasion a question about economic history. He did not know the answer but replied tersely 'Ask the Dean. The Dean may not know, but he will tell you'. In many fields of marketing research one has to remember that people may not know the answers to your questions but they will want to appear co-operative and will certainly try to tell you. It is necessary therefore to assess the reliability of all informants.

In this kind of work we often receive help from our counterparts—fellow economists and market researchers—in other firms and industries, particularly those who are also supplying the industry under review and who therefore have similar problems.

Using this general method one industry is tackled at a time. As an example of the results achieved a survey of the United Kingdom motor industry, made a few years ago, showed that the average size of car in this country was going down whilst in the United States the opposite was happening. The trend in C.K.D. exports of cars was also downwards due to higher exports to Europe and the United States (C.K.D. exports are unpainted, hence our interest). There was a trend in application methods from hand-spraying to automatic and electrostatic spray, and from roto-dip to slipper-dip, where the car slides through a tank of paint and only the bottom part is painted. All these trends are tending to contract the market for paint in the motor industry and they have to be assessed against the opposing trend of increasing car production.

The industrial survey may not always be concerned with markets. We have recently been looking into the production in this country of P.V.C. coated steel. This material has been developed in the United States and is being marketed here, and quite clearly threatened potential competition with certain paint markets. We needed to assess in which fields it would be used and to what extent.

We have also looked into the question of wall finishes which competed with paint, as used in the United States, Canada, Australia and Europe, besides this country. The conclusion was reached that it is difficult to persuade people to use paint instead of wallpaper which is much more widely used in this country than elsewhere!

CONSUMER SURVEYS

You are doubtless familiar with the principle of the consumer survey; in fact, it is probably the most widely understood of all marketing research techniques. A set of formal questions are put to a representative sample of the public, their answers are coded, analysed and interpreted, in order to provide information for solving problems usually arising in retail marketing. The huckster who sells bananas in the market-place every Saturday is well aware of his public; he is only a yard away from them. But our own company, for instance, as a large industrial firm, sells to wholesalers who in turn sell to retailers and they then sell to the public. We are thus two stages away from our ultimate customers. We therefore need to find out a good deal about the public's purchases of paints, market opinions and so on so that our marketing policies can be framed appropriately.

The first stage is to clarify the problem. That is a very common necessity of any work but it has special significance in relation to consumer surveys. Only recently we had a case where a remit for a job was drawn up consisting of four pages of close type and elaborating specific fields which should be explored. Unfortunately, we were three parts of the way through the work before it became clear that the real problem had been overlooked and really referred to an earlier stage in the line of thought. The remit, it was then realized, constituted an extension of the real problem with possible hypotheses and possible avenues for investigation.

The next stage in the consumer survey—research and planning—means collecting together all the information bearing on the problem first, prior to starting research. Planning is a matter of organizing a field force. Any agency or company doing consumer research usually employs a field force supervisor, who recruits, trains and supervises the field force which might consist of 100 to 1,000 interviewers scattered throughout the country according to the need of the firm or agency. The type of person suitable for interviewing work is someone with a fair education—usually a married woman who has brought up a family and no longer has children to look after, aged between 35 and 45, and with a fair amount of free time. Selected interviewers are given a thorough training with a period of probation of perhaps three to six months. Thereafter the supervisor watches their work continuously and they are regraded from time to time.

Books have been written about questionnaire construction and it is not appropriate for me to say much about this subject here. The golden rule is to use simple and colloquial language. The first part of a questionnaire should be a sort of introduction. Apart from the interviewer's introduction of herself the first two or three questions must give the interviewee an opportunity to 'tune in' to the subject of the interview. They must be general questions, not very important from the point of view of the investigation. The body of the questionnaire might comprise up to forty or fifty questions or as few as half a dozen and deals with the main problem. The third section of the questionnaire —the classification data—includes questions covering social class, age, type of household, region, and so forth, which are the headings under which all the other data will be analysed.

Having designed the questionnaire this is then put to a pilot sample to check that all the questions can be understood and to check that the questions are being asked of the right people; that adequate responses are received and that the questions will answer the problems set. From the results of the pilot it is possible to formulate a proper questionnaire for the full survey.

Several books have also been written on the subject of sample design—some of them very dry and voluminous books indeed. Briefly, the choice generally lies between the fully random sample and some form of quota sample, and the answer is usually some modified form of random sample which gives adequate accuracy at reasonable cost. In a random sample theoretically every individual in the country stands an equal chance of being chosen. This means that the interviewers would have to visit a very scattered sample in all parts of the country with obvious high administrative cost. A quota sample is a system whereby the number of people to be interviewed in each region/social class/sex/age group and so on is determined beforehand and the interviewers, usually operating in the street, have, by hook or by crook, to achieve their correct quota of interviews. Quota sampling is quicker and economical, but the danger lies in the 'hook or by crook' element. Whatever the system employed detailed instructions accompany the questionnaires sent out to interviewers.

When all the questionnaires are returned completed they are first edited and a proportion may be rejected as unsuitable. With experience it is not too difficult to pick out inconsistences or to know when an interviewer has been filling things in which are not replies from the public. In addition a certain number of check questions are included in each questionnaire so that if the thread of thought running through the questionnaire does not tie up it will be apparent. Finally, a card check is made of all the people whose names and addresses appear at the bottom of the questionnaires asking them whether they have, in fact, been interviewed.

Collating and analysis follows and this is primarily a matter of coding and using punched cards to produce the required statistical tables. The interpretation of the data enables conclusions to be formed and a report prepared which will answer the requirements of the remit.

The uses of a consumer survey are manifold. It can be used to give factual information on market sizes, the shares of the market of each brand, the shares of the market of each different type of product, who is buying, where the concentrations of purchase are, when people buy, what type of product they buy, regional variation, seasonal variation and trends. If surveys are repeated from time to time, indices of certain data can be formed, so providing a measure of the trend for each characteristic. Products for which information can be collected in this way include practically everything in the retail market which is branded.

Our own work has shown us that before we did this sort of consumer survey we knew very little, with any precision, about the retail market in paint. Paint is much more widely used than we, at one time, thought. Home decorating has increased in recent years, and people even enjoy it!

RETAIL AUDIT

The principle of the retail audit is that a sample of retailers—200, 500 or even 1,000 according to the project—are approached with a view to allowing the agency or firm conducting the research to visit them at regular intervals—once a week, or a month, or a quarter—to audit their stocks and check through their purchases, usually paying a fee for this facility. From the statistics obtained it is possible to calculate the sales, and from the collated sales figures indices can be evolved for sales by brand, pack size, type of shop, area of the country, and so on.

The Neilson organization do most of the retail audit work in this country and cover the pharmaceutical, confectionery, and parts of the grocery trades. One or two other agencies do some retail audits and a number of manufacturing firms do their own. The important thing about this system is that it provides information about sales to the public from a much wider sample than can be collected economically from the consumer survey. One can collect data from 500 shops, serving perhaps 250,000 households, whereas a consumer survey can cover only 2,000 or at most 5,000 economically. On the other hand the retail audit is limited to certain data on sales and so is not so flexible as the consumer survey. The table gives an example of retail audit results. The indices show first that 'X' brand has gained ground on all other brands in the period shown (25 per cent compared with 17 per cent rise). But progress of 'X' brand has varied—in Area 2 only a small rise whilst Area 3 showed 60 per cent increase. Maybe the difference is due to publicity or better distribution and examination of these factors points the way to general improvement in marketing.

RETAIL AUDIT—'X' BRAND INDEX

	I/57	II/57	III/57	IV/57	I/58	II/58
All Brands	100	105	108	110	115	117
'X' Brand Total	100	105	110	115	120	125
'X' Brand Area 1	100	106	111	115	121	124
'X' Brand Area 2	100	101	102	101	103	103
'X' Brand Area 3	100	112	122	139	147	160

CONSUMER PANELS

The principle of the consumer panel is similar to the retail audit but in this case usually about 2,000 housewives are asked to keep accurate diaries of their purchases each month. The information is collected regularly from each one and the purchases are coded, analysed and interpreted in much the same way as in the retail audit. The snag is that memory weaknesses lead to omissions; people forget to put the complete list of their purchases into their diary so that the results are not always as good. On the other hand, there is one decided advantage over the retail audit in that, for example, one can code each housewife according to whether she has a commercial television set or not. If a firm wants to check its television advertising it is then possible to see the effect on purchases by each class of housewife, those with and those without C.T.V. sets.

ADVERTISING RESEARCH

This is not a research technique but a whole field for research; however, this heading provides a convenient way of collecting together a number of different techniques. The advertiser's problem has always been to know when to advertise, to whom, what to say, and how to say it. There is always the danger of saying something irritating or something which does not match the customer's requirements, saying it to the wrong people or at the wrong time, all of which can waste money and effort. Last year (according to their annual report) Unilever spent £83 million on advertising; I believe it was the first Lord Leverhulme who said that half his advertising was wasted but he never knew which half. That is the problem confronting the marketing staff of any industrial firm.

Consumer surveys help by identifying important sections of the market, seasonal variations and so on. The retail audit tells the firm 'where to say it' and something about the product and pack size. In order to implement the programme, however, the advertiser needs to know more about the media which might be used to reach his potential customers. To meet this need the readership survey based on a large sample of the population gives numbers reading all the main periodicals with separate statistics for class/region/sex/age and other characteristics. The readership surveys most widely used are those published by the I.P.A. and Hulton's Press.

It is difficult to explain the use of the readership survey in a paper of this sort but the following small example may help to show its use in planning the appropriate media for an advertising campaign.

One thinks of the *Daily Herald* as a left-wing paper and the *Daily Express* as right-wing. One would guess that if a firm wanted to advertise to the working class it would be better to use the *Daily Herald* than the *Daily Express*. This appears to be the message of the first part of the table. But the readership survey tells us that because the *Daily Express* has a readership of nearly 10,000,000, as compared with the 3,700,000 of the *Daily Herald*, if one wants to reach the largest number of working-class people it is better to use the *Daily Express*.

	Social Class			
	Upper Middle	*Lower Middle*	*Working*	*Total*
Readership percentage				
Daily Express	11	21	68	100%
Daily Herald	2	10	88	100%
Readership '000s				
Daily Express	1,070	2,080	6,680	9,830
Daily Herald	90	360	3,310	3,760

To provide information as to who is watching commercial television for every second of the day, for each type of social class and for each region and so forth, there are two agencies in this country: T.A.M.—Television Audience Measurement—and Nielson. Both use some sort of mechanical device attached to a representative sample of the people's sets and the data received enable them to assess the size of the audience watching each programme and reports are then published regularly, usually once a month. Clearly it is important for the advertiser to know as much as possible about the size and type of television audience throughout each day, for each television area, so that his forthcoming campaign can be planned economically.

We have, therefore, very good data to assist with the choice of media as far as press and television are concerned. The contents of the advertisement, as I said earlier, are determined partly by the results of consumer surveys and retail audit. I will also refer to the value of motivation and attitude research as a guide to advertising content later on. In addition, however, we have two simple techniques which help us to determine the value of an advertisement. First, it is possible to construct a 'mock-up' of a proposed press or television advertisement and show this in a realistic setting (magazine or lounge as the case may be) to a representative sample audience.

Each person would be asked whether he or she had seen the advertisement in question, and if so, what they could remember of it or thought about it. In this way one can obtain an assessment of a number of possible advertisements, choose the best for production and possibly modify it after further testing. An advertisement may be post-tested in a similar way after its appearance, a representative sample of the public being asked for their reactions.

The problem of communication unfortunately involves a number of distinct stages. First, there is the question of gaining people's attention and after that obtaining understanding followed by conviction or persuasion, and finally of ensuring that it will be remembered as long as possible. An advertisement which succeeds at one stage will not necessarily be successful in the others. It is very difficult to conduct controlled experiments to check every stage in the process independently. An advertisement might be good from the point of view of arresting attention but it might, at the same time, carry little persuasion. It might be understood but not be likely to remain in the memory. Our understanding of the factors at work in this process is still weak and this is a field in which we shall expect to see developments in research techniques in the future.

Traditionally the upper classes were regarded as the leaders in fashion but it has been suggested that this is no longer the case. It has been suggested that for each type of product there is a section of the population who act as leaders in fashion and who must be influenced first in order to sell a new product or brand. For example it might be that there is a type of individual who is interested in amateur decorating, carpentry, and so on; he is almost a 'professional-amateur', odd job man, to whom his neighbours turn for advice on many domestic repair and maintenance problems. If that is the case it is desirable to direct advertisements to that type of individual. It is necessary first to ascertain whether there is in existence this little class of people who are affecting other people's opinions horizontally within the class structure, to define them as a class in terms which can be put to practical use by the advertiser. It has been suggested, too, that people who are climbing the social scale are more aware of advertisements because they are constantly adopting new living standards. The problem again is to identify them in terms of appropriate advertising media.

MOTIVATION AND ATTITUDE RESEARCH

When we ask people 'why' they do something or 'why' they made a certain purchase we may get a sensible and even a correct answer. All too frequently, however, the answer is couched in superficial terms, possibly related to the latest advertising campaign. People are rather shy about discussing their emotions, feelings or dislikes. These are regarded as personal matters not to be discussed with a stranger—and the interviewer is always a stranger so that the answer to 'why' people feel as they do about a product usually hides a good deal. It may be also that people just have not thought about the matter in question and answer that the choice is simply a matter of habit without being concerned to reflect on how they originally decided.

In this connection it is useful to look at the different levels of consumer experience. Factual matters of ordinary, everyday business—the brands used, the quantities used and the habits and customs of people may be termed the conative level of experience and is dealt with adequately by consumer survey. The same technique can be used to explore the cognitive level where we are dealing with knowledge assimilated and the overt factors surrounding the purchase reasoning. Finally we have the affective level dealing with motives and attitudes.

Motives or drives of which we may not be conscious, influence most of the things we do to some extent. Some derive from the fact that man is an animal with certain basic needs, e.g. hunger; others derive from more sophisticated origins Various methods of categorizing motives have been used. They have been categorized as primary, e.g. hunger, and secondary, e.g. health. They have also been categorized as rational and emotional. The following list gives quite a good way of grouping some of the important human motives but cannot pretend to be necessarily complete.

BASIC MOTIVES

Visceral	*Activity*	*Aesthetic*	*Emotional*
Food and drink	Exercise	Colour	Fear
Air and light	Rest	Shape	Shame
Temperature	Preservation	Taste, smell, touch	Self love
Sexual	Rhythm	Rhythm	Social esteem
	Novelty		Love of family
			Conformity
			Ambition
			Emulation

Quite separate from human motives but also a part of the affective level of consumer experience are consumer attitudes. These may be attitudes to a type of product, to a brand or to a manufacturer. For example, we were offered prunes for breakfast this morning; it might therefore interest you to know that a special study has been made in the United States connected with the promotion of prunes. An attitude study showed that the prune had been degraded and had come to be regarded as almost a medicine and further research was carried out to determine why that sort of image was attached to prunes and what should be done to re-create an image of nutritious food which is also pleasant to eat.

The simplest example of an attitude towards a brand or brand image is possibly 'Rolls-Royce', which signifies quality, durability and luxury. Nearly every brand has some sort of image—Guinness, Schweppes, Murraymints or Dulux Paints! The task of the researcher is to define that image as exactly as possible to show where it does not match the image which the manufacturer desires should be held and so point the way for future publicity.

The problem in our own case therefore is first to find out whether the average person's preponderant attitude to painting is that it is an awfully messy job or whether it is a means to a beautiful end. We also have to find out the motives for decorating—to what extent is social esteem, aesthetic taste or conformity, for instance, the major motivating influence.

The techniques employed in motivation research derive from clinical psychology, and have been evolved during the past ten to fifteen years. The course of this evolution has not been without dispute among researchers. On the one hand the psychologists have laid emphasis on their own special methods of personal interviewing, usually of only a few people, whereas the traditional market researchers have insisted on the need for full-scale sample surveys to validate hypotheses. We are arriving at a blend of the two approaches and a number of techniques are being adopted, the most useful of which I will describe briefly.

Directly deriving from the clinical background is first of all the 'Deep Interview'. In some of the first commercial research work the deep interview lasted for as long as forty hours; even now it may last an hour. Therein lies the snag; one has to have a particular type of person who will be co-operative. It can hardly be applied to the general public. The idea of the deep interview is to probe, without prompting, and then probe again, and so on, with the interviewer contributing as little as possible until the subject of the interview has been exhausted with the same ground sometimes traversed several times from various angles. This is clearly a specialist's job and requires not only training but considerable experience.

The group interview, by contrast, is relatively simple in that a selected group is invited to a discussion under an appointed chairman who might be a psychologist or sociologist, the theory being that each person stimulates the others to talk and so provides more information than would be obtained by separate interviews. This is useful as a quick method of obtaining leads for hypotheses which can then be checked by more precise methods.

Behaviour sampling consists of recording as near as possible the reasoning and consideration process leading up to a buying decision; this is done for a representative sample and collation of the results is then made with a view to showing how people came to decide as they did. Each interviewee is asked to give a little history of the process leading up to a purchase and much depends on the ability of the interviewer to clarify the salient stages.

Finally there are the projective methods which may take one of various forms. The underlying principle is that people find it easier to talk of feelings, attitudes and motives when they can ascribe these to some other person or thing, the theory being that the attitudes so described must, in fact, derive from their own experience and so in fact convey their own feelings, attitudes and motives to the interviewer unwittingly. The simplest of these methods, word association, involves simply giving the interviewee a word and asking him to say what he associates with it or, the opposite, or possibly to name a branded product which is then called to mind, e.g. 'painting' might convey 'a mess', 'a clean-up' or 'a smell'; 'decorating' might convey the impression of 'beauty' or 'a load of trouble' according to the prevailing attitude. Sentence completion works in much the same way, the interviewee being asked to complete a sentence such as 'Most people like decorating because. . .'. Clearly this gives them freedom to express their feelings without inhibitive emotional influences affecting the interview. In both instances the responsibility for attitudes or motives is transferred from the shoulders of the interviewee so that shyness and restraint are overcome to a considerable extent. Interpretation of the responses is not a simple matter and again is best conducted by the professional.

A third example of projective techniques derives from the thematic apperception tests used during the war and consists usually of a simple picture or cartoon depicting perhaps two characters in a fairly simple neutral situation, one of which would be shown to have said something. The interviewee is asked to give an appropriate response and then might be asked to expand on this. These three methods are similar and are all followed by collation of responses from an adequate sample. Role playing is usefully applied to brand or product image problems; for example, one might say, 'Imagine that you are a Dunlop rubber tyre, how do you picture yourself?' The answer might be 'strong, sturdy and reliable', or 'weak and floppy' according to the prevailing attitude.

As I said earlier, the psychological techniques in particular are the subject of active development work amongst marketing researchers. They are especially attractive for the problems they purport to solve and are of particular importance in this age of mass-produced branded goods. Used properly by the qualified expert they promise to emerge as a respectable contribution to the research toolbag.

These then are the techniques of the marketing researcher described, I fear, all too briefly. I hope I have made the point that this small but rapidly growing profession deserves respect, sufficient respect, that is to say, to induce the marketing man to take his problem to the marketing researcher instead of committing himself to 'a market research' automatically and without proper thought. There are many tools in the bag, usually several applied in a concerted effort will solve a given problem most efficiently, and the marketing researcher is the best man to select and apply them.

CHAIRMAN'S REMARKS

The Chairman, PRINCE YURKA GALITZINE (Managing Director of the international public relations consultancy, Galitzine & Partners), introducing the speaker, said that this subject was bound to interest all those present, since research was naturally the *raison d'être* of all their work. Today they would hear of one of its most important applications in the field of industry and commerce where it was related to selling. In that guise it came into modern jargon as 'marketing' or 'marketing research'. 'Marketing' was a new word which had been coined since the war and he had found a very good definition of it: 'The marketing principle is to co-ordinate all the operations of a business towards the ultimate profit objective and the planning that governs that co-ordination starts with the consumer'. That was a very good and brief definition of the word. The word 'research' needed no explanation.

Research was the handmaiden of the three arms of selling—public relations, advertising and sales force. Public relations was the way in which one approached a subject; advertising provided the tools which you used to get at it, and the sales force consisted of the people who actually brought the sale home.

Those who were responsible for the way in which things were done had to have continual access to public information about the best methods of approach and about present trends, tastes and prejudices. Many people thought of public relations as publicity; in fact, that was only about 20 per cent of the job. It consisted mainly of guiding the way in which things were done.

It was on public opinion, which so often was gathered through the highly complex scientific methods of market research, that public relations advice had to be based. Every time they tackled a new problem of any magnitude they always had first to conduct an opinion survey, upon which the forward plan was based, and it had to be repeated at intervals to enable them to check their facts.

So much for the subject: now for the man who thought about it. Mr. Cooper was a Cambridge economist who, after the war, joined I.C.I. Paints Division at Slough as a market research specialist. He was the first to be employed in the I.C.I. group, and at Slough had been engaged on all aspects of marketing research and had been largely responsible for helping the company's interest in this subject to grow, especially with the company's entry into the retail selling of things like paints, pharmaceuticals and many other products. In fact, there was a growing list of consumer goods with which Mr. Cooper and his section were now concerned. He was a member of the Market Research Society and was at present working on a committee of the British Institute of Management, which was preparing a course on advanced marketing research which it was hoped would be held in London in the spring of next year.

In the short discussion which followed the paper, points were raised by MR. VERNON D. FREEDLAND (British Hat and Allied Feltmakers Research Association), MISS M. P. TENCH (Radiochemical Centre, United Kingdom Atomic Energy Authority), MR. P. DILLON MALONE (Irish Management Institute) and MR. V. BISKE (Lobitos Oilfields Ltd.).

Concluding the session, the CHAIRMAN said that they had had a very interesting talk, finishing on the subject of motivation research on a rather George Orwellian note—a rather grisly indication of the future lying before them.

He would utter a word of warning, speaking as a user of marketing research. The results must not be taken too literally. Research must be only a guide, certainly in the initial stages. After seeing the result of one piece of research it was advisable to wait for the same research to be repeated over the same ground at certain regular intervals before starting to accept the results as firm indications. Any researcher would admit this and that the value of research depended on integrity of purpose or impartiality. Statistics could be slanted to prove any point required.

Results must be accurate and speedily assessed or there would be little value in them. He had been in New York in January and had talked to the president of one of the leading advertising agents, who had told him of a very interesting piece of research they had carried out into a certain brand of coffee. They had put three different brands of coffee into three plain bags and the housewives testing them said that bag C was delicious, to the extent of 60 per cent, and they wondered why it was not already on the market. Coffee A came at the bottom of the list. Then the same coffee was sent to the same housewives, coffee A being in a jar, coffee B in a tin and coffee C in the same packet that it had been in before. The housewives had then said that coffee A was quite remarkable and much better than the original coffee.

The question of marketing research was a matter of the most careful testing and retesting.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

ASLIB CALENDAR

NOVEMBER

TUESDAY 25th–FRIDAY 28th. Junior Introductory Course to Information Work. See paragraph below.

WEDNESDAY 26th. Course on handling Soviet and East European Material commences. See paragraph below.

THURSDAY 27th–FRIDAY 28th. Northern Branch Conference at Sheffield.

DECEMBER

TUESDAY 2nd. Midlands Branch meeting.

FRIDAY 5th. Fuel and Power Group meeting. See paragraph below.

THURSDAY 11th. Aeronautical Group meeting. See paragraph below.

FRIDAY 12th. Half-day meeting. See paragraph below.

1959

JANUARY

FRIDAY 16th. Fuel and Power Group visit. See paragraph below.

WEDNESDAY 21st. Midlands Branch meeting.

FEBRUARY

FRIDAY 6th. Scottish Branch Annual General Meeting. See paragraph below.

FRIDAY 13th. Fuel and Power Group visit. See paragraph below.

MARCH

WEDNESDAY 25th. Midlands Branch Annual General Meeting.

APRIL

FRIDAY 10th. Fuel and Power Group visit. See paragraph below.

Conferences, Courses and Meetings 1958–1959

A full programme of conferences, meetings and courses is planned for the coming year, and a member of staff has been freed from other duties to organize them and to act as liaison between Headquarters and the Groups. Group meetings are open to all Aslib members who are interested in them.

Notices and application forms have already been sent out for the junior introductory course to information work to be held in November, and for the course on handling Soviet and East European material to be given on Wednesday evenings from November to January. Details of courses on classification and on patents will be announced later. Two conferences also are planned for the near future, the subjects being standardization and the presentation and interpretation of technical information. The Thirty-fourth Annual Conference will be held in September or October 1959. A meeting will be held at 2.30 p.m. on Friday 12th December, at 3 Belgrave Square, to enable members to hear reports of the International Conference on Scientific Information, held in Washington, from some of the participants. Those who wish to attend should inform Aslib (Conferences and Courses Department) as soon as possible.

Annual Conference papers

This year, as an experiment, members are invited to submit papers on any subject related to information work, to be considered for inclusion in the 1959 Annual Conference programme. The Conference and Meetings Committee will be responsible for making a selection of two or three papers from those submitted and the authors will be asked to present the papers at the conference. Entries must reach Aslib (Conferences and Courses Department) not later than 1st March 1959, and should be typed in duplicate.

Mr. Jack Bird

Members who have sought advice from the Aslib Library during the past eight years will be sorry to hear that Mr. Jack Bird has resigned his post as librarian to become librarian to Morgan Brothers (Publishers) Limited. He will be greatly missed in Aslib and we wish him happiness and success in his new appointment.

Scottish Branch

Members who attended the first meeting of this season, on 8th October, spent an interesting afternoon visiting the bindery of Messrs. Dunn & Wilson, Falkirk. Under the personal guidance of Mr. George Dunn and Mr. Moncur, Works Manager, they were shown each stage in the process of bookbinding, from checking the collated pages to the finished product. Work for the bindery comes from all parts of Scotland, England, Wales and Ireland, and varies from the binding of regular periodicals and rebinding old books for the Scottish National Library, to finely tooled work in traditional style and special presentation bindings produced by highly skilled craftsmen. The Annual General Meeting will be held on Friday 6th February in Glasgow. The theme will be methods of patenting.

Aeronautical Group

The Group will hold a winter meeting at 3 Belgrave Square on Thursday 11th December at 2.30 p.m. Talks will be given by Major Oliver Stewart, editor of *Aeronautics*, on the history of piloting in aircraft, and by Mr. R. C. Wright, Librarian, Royal Aircraft Establishment, on his impressions of the International Conference on Scientific Information and his visits to libraries in the United States. Tea will be provided. Details and application forms will be distributed to members of the Group. Other members of Aslib wishing to attend should write to the Honorary Secretary of the Group, Mr. T. M. Aitchison, Divisional Librarian, The English Electric Company Limited, The Airport, Luton, Bedfordshire.

ASLIB INFORMATION

Fuel and Power Group

The Group's winter programme commenced with a visit, on 5th November, to the British Non-Ferrous Metals Research Association to see the library and information department. The next meeting will be held in London on Friday 5th December, when Mr. L. G. M. Roberts, Reference Officer, The Gas Council, will give a paper on literature searching in connection with water; all interested members of Aslib will be welcome. Three visits are already planned for the New Year: on 16th January, to Messrs. Glover & Main, manufacturers of meters and domestic gas appliances, at Edmonton; on 13th February, to the central research establishment of the Gas Council, Watson House Centre, Fulham; and on 10th April, to the works and library of the Ford Motor Company at Dagenham. Further details of all these meetings can be obtained from the Honorary Secretary of the Group, Mr. H. C. Claxton, C. C. Wakefield & Co. Ltd., 46 Grosvenor Street, London, W.1.

Radio Times Hulton Picture Library

The BBC have bought from the Hulton Press the *Picture Post* Library of six million illustrations. It will be known as the Radio Times Hulton Picture Library and will be moved to the BBC Publications Department at 35 Marylebone High Street in January 1959.

Welsh Information

A Technical Information Service for Wales is to be established at the Welsh College of Advanced Technology, Cathays Park, Cardiff. The steering committee, which is made up of members of the governing body of the College and of the Industrial Association of Wales and Monmouthshire, has been working in close co-operation with the Department of Scientific and Industrial Research. The service is financed from American Conditional Aid funds and is expected to be available before the end of November.

Bibliography of Social Work and Administration

The Fifth Supplement of the *Bibliography* has now been published. It contains a classified list of articles from selected British periodicals covering the year 1957. The supplement has been compiled by Miss F. M. Birkett, M.A., F.L.A., for the Joint University Council for Social and Public Administration. The classification covers population, eugenics, labour, social work and services, criminology and penology, social psychology, and leisure. It is obtainable from the Council at 51 Manchester Street, London, W.1. Price 5*s*.

MEMBERS' ADVERTISEMENTS

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

ASSISTANT LIBRARIAN required from 1st January 1959 for small library in central London. Commencing salary from £450 according to qualifications and experience. Contributory pension scheme in operation. Applications in writing to The Librarian, Timber Development Association, 21 College Hill, London, E.C.4.

BRITISH OXYGEN RESEARCH AND DEVELOPMENT LTD. have a vacancy for a scientific or engineering graduate with experience in abstracting and literature searching to assist in the technical assessments of projects with a view to patenting. Candidates should have a broad industrial outlook and preferably some practical scientific experience. Please write to: Secretary, British Oxygen Research & Development Ltd., Deer Park Road, London, S.W.19.

THE BRITISH PETROLEUM COMPANY LIMITED have an immediate vacancy for a TECHNICAL LIBRARIAN (male or female) for their Exploration and Production Laboratory at Sunbury-on-Thames. Graduates in any of the natural sciences required to take charge of the Technical Library which is part of the Information Section of a laboratory engaged on research in geology, geophysics and petroleum engineering. The post entails direct supervision of three junior staff. Previous library experience including abstracting an advantage; qualifications in librarianship desirable. Luncheon club; sports and social club; good pension scheme. Applicants should apply in writing stating age, qualifications and experience, quoting H.F.22 to Box 4017, c/o 191 Gresham House, E.C.2.

THE BRITISH RUBBER PRODUCERS' RESEARCH ASSOCIATION seeks the temporary services of a librarian for about two years from 1st January 1959 during the secondment of the permanent librarian to Malaya. Applicants should preferably be qualified librarians. Special library experience, acquaintance with sources of information and a knowledge of languages would be additional recommendations. Two library assistants. Good working conditions. Five-day week. Salary by arrangement. Applications as soon as possible, from suitably qualified candidates, who may include overseas librarians seeking experience in Great Britain or librarians about to retire but wishing to remain professionally active, to The Director of Research, 56 Tewin Road, Welwyn Garden City, Herts.

FEMALE PATENT ABSTRACTOR–SEARCHER required by THE BRITISH PETROLEUM COMPANY LIMITED for their City Office. Aged 20–35. Degree in science with chemistry essential. Knowledge of French and/or German and technical abstracting desirable. Luncheon club or luncheon vouchers; sports and social club; good pension scheme. Applicants should apply in writing stating age, qualifications and experience, quoting H.F.21 to Box 4013, c/o 191 Gresham House, E.C.2.

THE GRASSLAND RESEARCH INSTITUTE, Hurley, near Maidenhead, Berks. PUBLICATIONS EDITOR/LIBRARIAN. Applications are invited for this post which will become vacant in December 1958. The successful candidate will be required to edit Institute publications as well as scientific papers prepared by members of staff for publication in scientific journals. In addition he/she will have charge of the joint library of the Institute and the Commonwealth Bureau of Pastures and Field Crops. Assistance in running the library is provided. Primary qualifications are an honours degree in arts or science with some editorial experience and an interest in agricultural research. Previous library experience or training and knowledge of one or more foreign languages would be an asset. Salary on scale £1050–£1208 (men). Slightly less for women. The Governing Body of the Institute considers this post to be of key importance in the servicing of the work of the Institute and will be willing to consider for the post any applicant having special merit. For application forms and any further details apply Secretary.

LIBRARIAN required for Department of Metallurgy to provide a service for undergraduates and research groups. Experience of specialist library service desirable preferably in one of the sciences. Salary up to £500 p.a. Apply to Professor J. G. Ball, Imperial College, London, S.W.7.

LIBRARIAN required for new research building at present in course of erection at Speke. Applications are invited from University graduates holding a degree in Science. Previous experience of library work essential. Applications should be made to the Managing Director, Evans Medical Supplies Limited, Speke, Liverpool 24.

TECHNICAL ABSTRACTOR required in the Information Section of an industrial research department. Duties include abstracting, technical writing, preparation of bibliographies and answering technical inquiries. Must be able to write clearly and concisely. Experience in technical information work and knowledge of chemistry and physics to at least advanced level standard are essential. Reading knowledge of foreign languages is an advantage. Salary according to qualifications and experience. Apply in writing giving age and details of career to: Personnel Officer, The Metal Box Company Limited, Kendal Avenue, Westfields Road, Acton, W.3.

TRANSLATOR required for translation of Russian technical periodicals, books, etc. Sound knowledge of mechanical or production engineering. This is a key position in a rapidly expanding organization in the East Midlands. Excellent prospects of advancement, working conditions and superannuation scheme. Send full details to the Secretary, Production Engineering Research Association, Melton Mowbray, Leics.

ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 10 **December 1958** **Number 12**

RESEARCH INTO LIBRARY AND INFORMATION SERVICES*

33rd Annual Conference, Nottingham, 6th September 1958

THE Chairman, Mr. Leslie Wilson, Director of Aslib, said that at the 1954 Annual Conference in London he had suggested, as part of a talk about the future development of Aslib, that research was destined to play a central part. He had been surprised that an audience, whose main *raison d'être* was research in other fields, should have apparently found it difficult to accept the point of view that research was appropriate in their own field. He had been surprised because he saw research not as some mystical activity finding its origin in something beyond the ken of the ordinary person but as a purely practical step towards the improvement of the way in which they did their daily job.

It was now satisfying, however, to realize that in the short space of four years the wheel seemed to have turned full circle. Within the last year Aslib had been awarded a grant of £10,000 by the United States National Science Foundation to initiate a piece of research which was being done at the College of Aeronautics at Cranfield. Secondly, in Washington in November there was to be held an International Conference on Scientific Information, the basic concept of which was research into the various aspects of their work.

Thirdly, Aslib had recently been notified of the terms of the D.S.I.R. grant for 1959–63. Those terms, extremely generous ones, included a condition that Aslib should establish and maintain a programme of research appropriate to its field of activities. Here were three examples of a practical acceptance of the need for research in Aslib's field.

It was against that background that Mr. Hanson and Mr. Cleverdon were to speak to them that afternoon. Many would know that Mr. Hanson had been connected with technical information work in one way or another practically all his working life, including a period of technical journalism. Most of those present, however, knew him more intimately during the last twelve years, in which he had been the head of the Information Service of the British Scientific Instrument Research Association. Mr. Cleverdon, after a career in the Bristol public libraries and the library of the Bristol Aeroplane Company, had become librarian of the College of Aeronautics at Cranfield. Last year he had been Chairman of the Council of Aslib.

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* Abridged report.

VOL. 10, NO. 12 ASLIB PROCEEDINGS DECEMBER 1958

AIMS AND OBJECTS FOR RESEARCH INTO INFORMATION SERVICES

BY C. W. HANSON, B.SC.

British Scientific Instrument Research Association

For more than a decade 'research' has been a popular word and even a fashionable one. That does not mean to say that all researches proposed have been undertaken; cost has to be considered. Broadly speaking, however, it is true to say that the value of research in the exact sciences has become widely accepted.

The same is not true in other fields of knowledge, particularly in those where the human element plays a very large part. Thus, the case for investigating, by research, the flow of fluid in a pipe is almost universally accepted, but the case for analysing the flow of information by research techniques is by no means widely agreed. On information and library matters it is a fact that many people feel that research is unlikely to do more than confirm the opinions of experienced people and to do so very often in a rather expensive manner.

Human beings are not easy research material but human beings are very much involved in our problems as providers of information and as receivers and users of it. Nevertheless, I believe that it is possible to apply research methods to information and library work, not merely to the minutiae of library operations but much more widely. We can observe human beings and measure their reactions to certain stimuli and, on the basis of knowledge deliberately acquired, plus an analysis of records which already exist but which are not yet co-ordinated, we can begin to develop hypotheses which will be useful—hypotheses which can be tested by further experiments. From such work we should be able to produce generalizations that will be both fruitful and useful. Such generalizations will not, by themselves, solve anyone's problems. They will, however, provide a framework within which a problem can be placed and give some sort of guide to policy and action.

As the Chairman has said, a good deal of progress has been made in the last few years. The wind is blowing in the right direction and I am sure that by the end of the next decade we shall be armed with a great deal more factual knowledge and much more mature analyses of work that has been done both during that decade and earlier. We shall then begin to see an outline of an integrated scheme of generalizations which will form a framework for our work.

Before that stage is reached, however, I think that we shall come up against the difficulty of getting our results applied. As the Chairman has further pointed out, research need not be an esoteric and mysterious activity. It is our ultimate aim that the results of our research should become everyday knowledge, used almost unconsciously by all the practitioners in the field of library and information work. At the earliest stages, therefore, we need to give careful thought to framing our programme in the best possible way so that it will not only be carried out satisfactorily but will also ensure that the results shall be issued in a form in which they can be widely used.

Aslib and other bodies have done a good deal of work in recent years in looking at research problems. One of the most fundamental and difficult questions is, 'How many people can properly be devoted to information work in order to serve a group of a given number of research workers?' I do not think that it is possible to get a really precise answer but, with additional work, primarily analytical, it should be possible to arrive at an optimum, and that optimum would be worth knowing.

We need to know a great deal more about the type of staff to employ on information work. We want to know much more about the kind of inquiries that come to a well-staffed technical information department so that we can decide with greater certainty the kind of staff best equipped to deal with them. It is only recently that I have consciously realized the high percentage of technical inquiries received in my organization which are basically inquiries about sources of supply of a particular kind of instrument. I must have been aware of this fact for years but I had failed to realize it because I had not been looking at the records in a research state of mind. Now, having consciously realized the situation, we have built up a sub-section, staffed by people specially equipped to deal with this type of inquiry.

There seems to be an extraordinary lack of easily obtainable and 'look-upable' information about the time and cost of a number of operations that we all do in one way or another dozens of times. Considering the number of printed subject indexes that are made, it is quite ludicrous that it is not at all easy to look up, for instance, how long it would take to make an alphabetical subject index of 10,000 abstracts. Even a rough figure would be invaluable.

A further matter on which we need to know more are the circumstances in which it is economical to build up one's own subject card index. Clearly there are circumstances in which it is the sensible thing to do but there are others in which it is not. If there is reason to suppose that a fairly substantial proportion of the queries will lie outside one's central subject field, it means that one will not be able to foresee a high proportion of one's future needs. The card index would then always be substantially insufficient and it would often be necessary to go additionally to other sources of information. In such circumstances it might be better not to go to the immense amount of labour involved in building up a big card index; in other circumstances the opposite would be true. That problem is amenable to research.

We are reaching the point when we need some investigation of the *bad* effects of co-operation. I am quite convinced that while the enormous increase in co-operation, formal and informal, between libraries and information bureaux has produced great advantages, it has also certain specific bad effects. It has become increasingly common for an information service to pass on to some other specialist organization a quite simple question which, even if not in its own field, could have been adequately answered from its own resources. Admittedly the answer, given by the specialists, will be based on a great deal of expertize, but was it necessary to send the inquiry on? Looked at nationally, it represents a waste of effort.

Workers in experimental laboratories often have trouble in constructing research programmes and in finding satisfactory projects. Aslib will not have that trouble; there are a number of reasonable projects waiting. The special difficulty will be to make a wise choice. I think that the right decision would be to tackle a small number of major projects which look as if they will provide knowledge of fundamental and long-term value but at the same time to have in hand one or two minor investigations which can be expected to give fairly quick and easily applicable results useful in answering day-to-day inquiries. It is desirable that Aslib should provide an *ad hoc* service which will use its research experience and data as these pile up.

I look forward to the Annual Conference ten years hence. I believe that if Aslib and the other bodies interested in research do their work well, and if there is reasonable co-operation between them, the situation for ordinary practitioners will be reformed. I look forward to the day when we have not only the *Aslib Handbook* but the *Aslib Data Book*—something in our field corresponding to Kempe's *Engineers' Year Book* or Perry's *Chemical Engineers' Handbook*. In one or two decades we ought to have established convenient rules of thumb which the ordinary practitioner can use and take for granted. If this happens it will be because of the preliminary work which has been done by Aslib and other bodies.

DOCUMENTATION RESEARCH AND ASLIB

BY C. W. CLEVERDON

Librarian, College of Aeronautics

Few people would deny that the purchase and move into Aslib's new headquarters was a matter of very great importance but I believe that the increased grant made to Aslib by the Department of Scientific and Industrial Research is of even greater potential importance. During the last five years the grant had been a maximum of £7,000 a year but the new grant, starting in January 1959, would be £12,000 a year, conditional on Aslib raising £15,000, with a further £100 for every extra £100 raised up to a maximum of £18,000.

The grant had been made conditional on Aslib appointing a competent senior research officer, establishing and maintaining an appropriate programme of research, and forming an appropriate research committee. The post of research director has already been advertised and it is expected that in the first phase two further members of the research staff will be appointed. It therefore seems likely that within the next few months there will be on the Aslib staff a small team with no duties other than to investigate matters appertaining to the efficient organization and working of documentation services in Great Britain.

In a paper given two years ago at Brighton I suggested that a sum of £50,000 a year for a minimum of seven years was required to be spent on documentation research. The only comment that had come up in the discussion concerning this figure was that it should be at least £100,000 a year. As, in my concluding remarks at the Conference, I willingly adopted this figure, it may seem rather odd that I should be enthusiastic about the grant of a few thousand pounds. It is not only because the grant will be the first regular grant for documentation research to be made in this country; more particularly, it is because of the circumstances in which the grant has been given.

The grant to Aslib is a challenge to all its members; a challenge greater than any that has been put to it since its formation thirty-four years ago; a challenge to all its members to show that they do not belong to Aslib only for what they can get out; a challenge to all those engaged in information work, to prove that they have a firm belief in the importance of information services for the well-being of their individual organizations and for the country. If that challenge is met I believe that the value of the basic grant could increase manyfold and that the research work which can be done, by and through Aslib or with its active co-operation, can be as great as that which would cost £100,000 if done by an independent organization.

This might sound a rash statement but the purpose of this paper is to show how it might be achieved. To define the objective, this is taken as the annual expenditure within four years of £100,000, or its equivalent, on research into documentation. I take the equivalent of this sum of money, after making due allowance for overheads and clerical staff, to be about thirty to thirty-five research staff.

The accumulation of circumstances which might achieve this result can be put into six groups. First, Aslib can agree to divert a proportion of its own revenue to research activities and thereby increase the size of its research staff. Such a course clearly means either less expenditure on some present activity or, alternatively, an increased revenue without a corresponding increase in present services.

Secondly, there is a possibility of increasing Aslib's research staff by undertaking specific projects. The subject of such research and a suitable programme might be proposed and worked out by Aslib, who would then try to find an organization willing to put up the necessary funds. This would be, at first, the most effective way, but once the research group had been established it would probably be asked to undertake specific projects by other organizations.

Thirdly, we might expect that an impetus will be given to the investigations being undertaken in some of the larger organizations amongst Aslib's members. An obvious example of such work is that which has been done at the Royal Aircraft Establishment, Farnborough, and all research work at similar organizations should receive the encouragement of Aslib and it should be co-ordinated.

Next there is the possibility of equipment manufacturers undertaking research into projects designed for some aspect of information work. This might not seem particularly closely tied to Aslib but a clear analysis and statement by the research team of the type of equipment required, for instance, in mechanical methods of information retrieval, should encourage manufacturers to do the necessary research work.

The next field of activity is in the universities. Aslib has had no hand in the work being done at Cambridge or London on mechanical translation but Aslib should not only do everything possible to encourage further research at the universities into documentation but the Aslib staff should keep themselves fully aware of any activities in allied fields of possible interest.

Finally, we come to the part which can be taken by the Aslib membership as a whole, the most vital and hopeful field of development. While it is certain that many of the problems requiring investigation need the full-time efforts of a trained research team, yet there are still many problems which can probably be tackled most successfully on a co-operative basis under central direction. As an example, it would be valuable to know for how long one was justified in maintaining entries in an internal index. That is to say, should one discard from the index all entries relating to periodical or report literature more than a certain number of years old, and if so, what should that number be? Should it be two, five, fifteen or fifty? At present it is anybody's guess. This is a matter of importance because if by discarding after three years one could keep the index down to 20,000 entries, it might be found to be better to use a system or a machine which coped economically and efficiently with this size of index but which would be less efficient with an index five times the size.

The alternatives to the internal index are the use of published indexes, published bibliographies, lists of references in later articles on the subjects, or textbooks. Gradually, it can be presumed, all papers that have any permanent value will be referenced or summarized in later works. An investigation on this matter could also be tied in to the frequency of use of older periodicals or report literature.

The best way to approach such a problem would be for a number of individuals, possibly as many as fifty, to investigate the position in their own organizations and in their different subject fields. An analysis of their findings might reveal information on which a definite recommendation could be made. Alternatively, the results might point the way for further investigation.

Within Aslib itself the branches and groups might act as research centres. There will be an increasing amount of work to be done by the research staff and it would appear that it might be of particular value if advantage could be taken of existing committees. In addition, it is to be hoped that every advantage will be taken to enlist the interest and support not only of other organizations which are directly involved in information activities, but also of the scientific and technical societies or institutions which are concerned with the use of information.

These are personal views on how Aslib might develop so as to make the maximum use of the money and the staff given it. I am sure that when the research staff have been appointed they will be able to think of many other ways of extending their activities.

Mr. Hanson gave some reasons why research was necessary. I have not attempted to give reasons why a particular individual, already harassed and overworked in his efforts to do too much with too few resources, should divert any activities to assist in a research programme. Although the circumstances in which some members of Aslib have to work are such as virtually to exclude the possibility of their being able to take an active or useful part, nobody should put himself in this class too readily.

There is only one reason against an individual directly assisting Aslib in its research programme and that is that it would mean more work probably outside normal working hours. However, those who are in information work because they like it and not merely because of what they get out of it would find a personal satisfaction which would probably outweigh any other consideration.

My experience is that nothing awakens the interest of users more than to find that the library is itself engaged in research. People are keen to give specialist advice and can readily be brought to the stage of being willing co-operators and becoming the subjects of experiments. In such circumstances the prestige and standing of the library cannot fail to be enhanced.

I suggest that information services at present are at the same stage of development as the old Model T Ford of the early 1920s. It had been a very good car but it is not what the public wants today and any manufacturer who tried to sell such a car would soon find himself out of business. It is unlikely that librarians will go out of business but I suggest that it behoves all of us to help improve library efficiency so that we can give a service which the present-day customer wants and—more important—needs.

DISCUSSION

MR. VERNON D. FREEDLAND (British Hat and Allied Feltmakers' Research Association) said that much research work could be done that would benefit the large and well-established libraries but he wanted to put in a plea that research should be carried out with the large number of small libraries in mind.

MR. V. BISKE (Lobitos Oilfields Ltd.) suggested that the co-operation of members would be facilitated if a lead could be given from headquarters. Much of the research would depend upon statistics. Perhaps some sort of form could be circulated asking not merely about the number of books but questions such as the number per research worker; the proportion of journals never used; the type of queries put and the type that had to be sent outside, etc. If such a form could be designed and distributed, and sent in annually, many of the smaller as well as larger organizations might be able to add to the research information collected.

THE CHAIRMAN said that it was the intention that that sort of thing should be done. They were as yet very much in the initial stages of planning the research. Mr. Cleverdon had suggested that Aslib's role might be to act as a catalyst; while it might conduct some research itself, its major role might be to define the problem, promote the necessary research and co-ordinate plans and results.

MR. P. F. COLE (The British Petroleum Co. Ltd.) pointed out that a very considerable number of people had undertaken research into the information requirements of scientists but there had been no uniform approach, with the result that different things had been measured and it was almost impossible to derive any useful generalizations or conclusion. One of the first tasks of the Aslib research team should be to develop a series of yardsticks, by which published results could be evaluated and divorced from the subject field to which they applied, so that general conclusions could be drawn.

DR. D. J. URQUHART (Department of Scientific and Industrial Research) thought that it might be useful to state the way the D.S.I.R. looked at the problem. They had come to the conclusion that all documentation activity which was going on denoted a familiar state—'Paper, paper everywhere, and never a stop to think!' They wanted not more work but more thought in Aslib.

Research involved measurement but all measurement was not research. In D.S.I.R. they were concentrating on trying to measure things which would determine policy, even policy about research itself. There had been a great deal of talk about mechanical retrieval but there was no positive information to indicate that expenditure upon computers in this work would be justified. The idea that Russian scientific literature was inaccessible to most British scientists had been put forward long ago but it was evidence that only 2 per cent could read Russian, as compared with 80 per cent who could read French and 50 per cent who knew German, that convinced the powers-that-be that something special would have to be done about it. Assembling the necessary figures did not involve a great deal of work; it meant sending out a number of letters. Research in the field of documentation was rather on that level; it was not a question of elaborate machines but of formulating problems.

MR. J. FARRADANE (Tate & Lyle Research Laboratories) said that at the Royal Society Information Conference in 1948, Professor Bernal had put forward a scheme of publication which he thought would solve many existing problems but he had dropped it on the grounds that a small survey of the reading habits of scientists had indicated behaviour incompatible with the scheme. The trouble was that what he was investigating in his survey was the existing position and what he had been proposing was something that did not exist and could not therefore be measured against it. Was it enough to measure what was being done in a field where there was so much diversity and so little knowledge whether anything being done could be called efficient in relation to any other way of working? To a large extent the field of research upon which they were embarking was concerned with what people were doing and very little was measurable with a reasonable degree of accuracy. It was necessary to confine researches to measuring what had previously been found to be measurable and that in itself required a good deal of research.

MR. L. J. H. HAYLOR (Ministry of Supply, TIL) said the word 'research' was overworked. A member of Aslib in a small library might say 'Research is too much up in the clouds for me', but if the team began to talk in terms of development—working out results and making use of them—the smaller units would feel that they did have some contribution to make. Thought must be given to terminology.

MR. R. C. WOOD (Ericsson Telephones Ltd.) said that if they were going to bring a research team together before they knew what their project was they would be putting the cart before the horse.

MR. T. OPATOWSKI (late of Aslib Cranfield Research Project) remarked that much measurement was being done but not under properly controlled conditions. The conclusions that were being drawn were in respect of particular conditions, thus nobody else wished to apply them because each person thought he had a different set of conditions which made the results inapplicable. It was not fair to measure what readers did at the moment, since their actions were probably affected by the system it was desired to improve. The correct approach should be to decide first on what the optimum system was required to do.

MR. FELIX LIEBESNY (The British Aluminium Co. Ltd.) agreed with Mr. Haylor that there were two kinds of research. The first was concerned with the question of how to make a system more efficient; that was applied research. But once that had been done the question remained: Why use that system in the first place? That was pure research.

MR. HANSON, in reply, said that he was acutely conscious of the real danger of examining current practice and then trying to apply results, forgetting that the basis of current practice may be quite unsatisfactory. On the question of reading habits of scientists, it had seemed to him that the findings of Professor Bernal had been surprisingly close to the later findings of Saul Herner in the United States, with the exception of the reading habits of the doctors in the two countries. These two investigations represented the beginnings of something approaching a knowledge of that subject. He understood that Fishenden was doing a further paper on the same subject in Washington.

It was not to be expected that one could undertake first one piece of research, then a second piece, find the results in perfect agreement and at once accept them as the truth. One had to build up a very considerable body of fact before one could hope to make valid generalizations.

MR. CLEVERDON, replying, said that the question had been raised of whether the activities outlined could be called 'research'. The *Oxford Dictionary* defined 'research' as 'The active searching, closely or carefully, for or after a specified thing or person; an investigation directed to the discovery of some fact by the careful study of a subject; a course of critical or scientific inquiry'. This definition covered everything he included in research and he saw no reason to use any other word to describe the type of work he had in mind.

He agreed with Mr. Freedland about the need for investigating problems of interest to small libraries. They might seem relatively unimportant but it was what small libraries could do and the best way of doing it that needed to be known.

No case had been made out for the use of a high-speed computer in information retrieval and it was difficult to see how one could be economically supplied. However, if at a cost of only £2,000 a machine were produced that would do the work required, he still did not know whether one would be justified in spending even £2,000. All sorts of arrangements had to be tried before one could say whether one should try to apply some new invention or achievement to the problems.

There were a few national libraries in the world which had problems completely outside the scope of 99.9 per cent of the total of information services; it was the problems of the large majority which had to be investigated so that they could achieve the greatest efficiency, and it was in this field that Aslib could work so usefully through its large body of members.

THE ART OF LECTURING*

BY G. KITSON CLARK, LITT.D., and

COMMANDER E. BIDDER CLARK, O.B.E., R.N.

33rd Annual Conference, Nottingham, 7th September 1958

THE Chairman, Mr. K. W. Humphreys (University of Birmingham), said that 9.15 on a Sunday morning was not the best time for listening to a lecture and the number present was a considerable tribute to the distinction of the lecturers and perhaps also to the importance of the subject. They were all concerned with the collection and dissemination of information, and although they usually presented their information by way of the written word, there were undoubtedly many occasions when it was necessary to present it verbally. They would therefore be grateful for any advice they received from the speakers.

Dr. Kitson Clark was a Fellow of Trinity College, Cambridge, and Reader on Constitutional History at the University of Cambridge. Most of the audience would have read some of his published works in books and periodicals and some would also have read his pamphlet on the art of lecturing.†

His brother, Commander Bidder Clark, had been in the Royal Navy for thirty years and was at present concerned mainly with Civil Defence, in connection with which he had made himself particularly knowledgeable on visual aids.

DR. G. KITSON CLARK said that he had removed the microphones from the platform; they were not going to use them at all. The reason was that it was absolutely necessary for people who were going to have the job of instruction by speaking to be able to speak without microphones.

The lecture would be divided into two parts. The first would be given by him and the second by his brother. They were rather different characters. He (Dr. Kitson Clark) was a don from Cambridge—the humblest and least offensive of all living creatures. His brother was a rather different type of person who could tell the audience about himself if he thought fit. They had never appeared on the same bill before and it rather depended on what happened that day whether they ever would do so again.

He (Dr. Kitson Clark) represented one type of experience—university experience—and his brother represented another type—the experience of instruction for Civil Defence. The audiences with which each of them had to deal, therefore, differed, and it was probable that in the work that Aslib members had to do they had to grapple with both types of audience.

When a man had the impudence to lecture on the art of lecturing it might seem to be a kind of claim that he was a particularly good lecturer; Dr. Kitson Clark made no such claim. His only claim to speak on this subject was that for a period of his life—which had not quite come to an end—he had had to deal with university appointments and promotions, and in the course of considering the cases of a very large number of young men and women who had wanted jobs in the universities he had come across a great many very sad cases of people whose whole career had been vitiated because they could not lecture; they had tried, and the thing had not come off. On analysis it had been found they had not come off because they had been making a series of mistakes that could be remedied.

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* Abridged report.

† G. KITSON CLARK, *The art of lecturing*. Cambridge, Heffer. 20 pp. o.p. (A new edition is in preparation.)

The points he was going to illustrate were very simple ones—so simple that the audience would probably want to drive him from the hall—but in his experience lecturers went wrong because they neglected simple things; and those who failed had one point in common, they did not know what they were doing wrong. When, in order to write a small pamphlet on lecturing, he had expanded his view from those struggling beginners to other, more eminent lecturers, he found he could put an eminent name to every mistake he mentioned. But they did not know what they were doing wrong and this ignorance could, in each case, be traced to a primary cause; they did not concentrate on the classes before them.

The first and most important rule, therefore, was to think of one's class the whole time. To think of them while one was preparing one's lecture, for it was necessary to have clearly in mind how much the audience was likely to be able to accept. It was necessary also to think of the class during the lecture. How much were they taking in? Was one going too fast? Was one going too slow? Was the stuff one was giving them too elementary? Most painful of all, after a lecture it was sometimes necessary to try to find out how much the audience had got from the lecture by looking at the notes of someone who had attended it, and nothing in the whole world was so humilitating as looking at notes which had been taken down from something one had said.

From the need to think of your class all the time came the first piece of physical advice—how to stand. You had to look your audience in the face the whole time and always had to be full-face to them, if possible, with adequate light on your face, so that they could see you. That might appear to be obvious but it was not. Many of the unfortunate young people whose cases he had had to investigate had made the mistake of not looking at their class. They had buried their heads in their notes; they had looked out of the window or had allowed their eyes to range over all the pictures in the hall, but they had not done what it was vital for them to do, which was to look at the people to whom they were talking.

But it might be said: 'If I am going to look at my audience the whole time how can I write on the board; how can I consult my notes?' The answer was that if the lecturer needed to write on the board during the course of his lecture he should do so without talking and then turn round and talk. He should never go on talking while he was doing something which necessitated turning away from the audience.

The same consideration applied to using notes. In Lord Halifax's reminiscences there was an extremely good piece of advice which Winston Churchill had given Lord Halifax when he was a young man, which was to the effect that if it was necessary to consult your notes it should be done obviously; you should stop talking, put on your spectacles, look down at your notes slowly—and not be ashamed of doing so—then look up again and speak. To look at your notes was a perfectly natural action. There was nothing to be ashamed of in having notes, and if you could do that kind of natural action easily you put yourself on easy terms with the people you were talking to, which was very important.

If you had to have notes it was necessary to have notes in which you could find your place easily. If the lecture was written out as a piece of continuous prose, with even lines, you would be lost if you raised your eyes. You needed notes in a form that was easily handled; a form where you could manœuvre the notes and turn over quickly and written in such a way—by being broken up into headings—that your could find your place at once. It was very important not to fill the whole page with writing but to leave spaces and also to remember that the eye travelled downwards more easily than it travelled across the page. It was therefore better to have oblong sheets than square ones.

You had to look at the class the whole time to hold their attention to see whether they were following the lecture and also to be sure that they were hearing what was said. The lecturer's eye should travel all over the hall during the course of the lecture so that he could see into the corners and see that the people there were really able to hear. The hall might be bad but in that case the lecturer should try to do something about it. No man had any right to go on for fifty minutes or longer speaking in a mumble which people could not hear.

That raised the question of voice production. It was a technical question. If a person was going to do a fair amount of lecturing it was important for him to find out how his voice carried. A candid friend sitting at the back of the room might be of advantage. He was a bachelor himself but he believed that in this respect at least there might be some advantage in marriage; one might then have someone who would say quite frankly when one was not being heard at all.

If it was necessary to refer to a technical word which the audience was not likely to know it was necessary to pronounce the consonants in that word—particularly those at the end—very clearly. Very often a word got swallowed and was never fully pronounced. If it was a familiar word it did not matter so much because the audience would make a guess at it, but with a strange word they would be entirely lost. It was necessary to be sure that the end of the word was spoken properly and the same thing applied to the end of sentences. People dealing with voice production often said that the voice should never be dropped at the end of a sentence, but that was an equivocal statement and it might be thought to mean that one should never go on a low note at the end of a sentence. It did not mean that; it meant that as much force had to be put into the last words of the sentence as into the first.

There were two reasons why some people did not do that. First, they were inclined to do too much on one breath. Any singer would confirm that if the breathing were not properly managed the words could not be got out properly. It could not be done with the lungs half empty. It had taken him a long time to discover that. The second reason was that people's minds naturally went on ahead to the next sentence. They were forming it in their mind and as a result they forgot to get the sentence they were saying clear. That caused a constant blurring effect which spoilt much public speaking.

But it was no good being heard if you could not be understood; and you would not be understood if you did not prepare your matter very carefully beforehand. It was impossible to speak about learned matters, such as those with which Aslib was dealing, extempore. What was needed for an effective lecture was very careful preparation beforehand—immediately beforehand. It was advisable to go over the material again and again until it was clear in your mind, so clear that you could—although you never would do so because you were too frightened to attempt it—lecture entirely without notes.

He knew that it was possible to do that because on three occasions he had either left his notebook behind or had brought the wrong one to a lecture and had had to face the class with a complicated lecture and no notes at all. Because he had been through the thing very carefully the lecture had come out in its proper order as it would have done if he had had the notes in his hand.

There were *three* problems to bear in mind in connection with the preparation of notes. The *first* and most important was in what order was the material going to be dealt with. You had to say to yourself, 'What shall I put first?' and 'What shall I lead on to?' It was necessary to think about the nature of the audience. If it was ignorant of the subject being talked about it would be necessary to start with the elements. If the audience was not ignorant, or did not think that it was, it would immediately despise a lecturer who did start with the elements.

Even so it would be necessary to ask yourself whether you were making assumptions with which the audience was unfamiliar. It had to be remembered that the matter with which any lecturer is dealing will be much more familiar to him than to his audience. It was therefore necessary not to assume knowledge which the audience did not possess, not to use without first explaining them technical terms with which it might be unfamiliar and not to fail to explain fairly early on in the lecture what was the general object of the lecture. Those lectures had failed most completely when members of the class complained afterwards, 'I could never see what he was getting at'. It was necessary, therefore, for a lecturer to think very carefully how he should start and then how each of his points should work on from that beginning.

A lecture had to be planned like a campaign; the lecturer had to seize a point, consolidate it, and then move on to the next. How to move on presented difficult and important considerations. The connections were important, for if the lecturer wandered aimlessly from point to point or slid from one subject to another without marking the change the audience would not find the lecture easy to remember or to make notes from. An effective notebook was one which was arranged in headings, and therefore if the lecture was to be successful it had also to be arranged under headings. Therefore the *second* problem was how the lecture should be divided.

When you were giving an absolutely down-to-earth lecture, upon which the members of your audience might be examined, it helped them considerably if you divided it up into 1's, 2's and 3's, although it spoilt the lecture from the point of view of elegance.

The *third* important problem to consider was the time which the lecture was going to take—the time that each part of it would take and the total time it would take to deliver. Most young lecturers prepared far more than they could possibly get through in the time available and they therefore ended by giving only half or a quarter of the lecture they had planned or they began to get worried and hurried towards the end, which caused the proceedings to become something of a rout. It was necessary to make sure that you were proceeding through your speech at a reasonable pace; that the amount you had prepared was really what you could deal with in the time, and that you were not breaking up the sequence of your various subjects by telling stories, etc., in such a way as to put you behind time.

That brought him to the next point in the entertainment. Dr. Kitson Clark had promised his brother to be finished at 10 o'clock, which was then striking, and he would therefore give place to him.

COMMANDER E. BIDDER CLARK said that he was going to talk about visual aids. It was a truism that the more senses you could evoke the more your memory retained and the more your mind grasped. The operative word was 'aid'. If your most expensive film, or best-wrought model, was getting between your class and what you were trying to tell it should be dispensed with.

Any sense which could be evoked helped the lecturer. No schoolboy would forget the smell of sulphuretted hydrogen. Smells often brought back memories but they were not usually available to the lecturer.

The main thing about a visual aid was that it should be memorable. There was difficulty in getting over the idea of an acceptable dose of gamma radiation. People tended to say, 'You said that I can have so many Roentgens', but it was important to stress that not only the total dose mattered but the speed with which that dose was absorbed. To bring this fact home he had used the analogy of a whisky bottle.

The visual aid should not be produced before it was wanted and it should be removed immediately after it had been dealt with, if possible.

The one visual aid which nobody could avoid using was his own body. It was in front of the class the whole time. Dress was extremely important. The gown of the lecturer or preacher had not been fortuitous; it had been evolved for a purpose. The clothes of the lecturer should be such as to give him confidence and not to distract his audience.

He would say that if a lecturer was not nervous at the start of his lecture he would not give a good lecture, but how did one start to calm oneself and get rid of one's proper nervousness? He had two specifics for that. First, take two deep breaths while looking round the hall. Then, if one were still nervous, the process should be repeated. The lecturer might have a good look at the audience and say to himself, 'Ye Gods, what a crowd!' That remark should not be said aloud!

The lecturer should cultivate stillness and train himself not to fidget. If he were used to jingling his money in his pocket he should leave it behind. The use of a pointer was necessary, otherwise you got between what you were trying to show and the audience. But when you had finished with the pointer you should put it down. You should decide beforehand where you would stand and avoid the tiger's prowl. It was also necessary to remember where your hands were and what they were doing.

The most versatile visual aid was the blackboard. By drawing things in a certain way—such as in the way a child drew a human being—it was possible to evoke an implied sense of touch. The cat that he had drawn on the board was unmistakably a cat although no real cat ever looked like it. On a blackboard one could not attempt any sort of verisimilitude.

An absolute drawback of the blackboard was that you could not draw on it without turning your back on the class and as soon as you turned your back you broke contact with them. If you had to draw a diagram on the board it was advisable to draw it in pencil first so that you could go over it quickly with the chalk and break contact with your audience for the shortest possible time.

Another visual aid, which was not used nearly enough, was the blanket board. It was not so flexible as the blackboard but much quicker. You put whatever you wanted to illustrate on paper beforehand and then stuck on the back a piece of lint or fine sandpaper. You then pressed the sandpaper-backed illustration on to the blanket, where it would remain firmly fixed. It was possible to have a much more detailed and multi-coloured diagram using this method. If you wanted to extemporize, however, the blackboard was the only answer.

Prepared 'charts', as used by Army lecturers, were good. You could have a whole row of them, rolled up, and unroll them one by one as required. The difficulty was to dispose of them when they were finished with.

If it was necessary to introduce the figure of a human, animal or thing the best way to portray it was by way of a silhouette. It was imperative to avoid using the sort of conventional little man one saw used in various statistical charts.

Models were fascinating things to prepare but they were the most dangerous of visual aids. Although they caused the lecturer a great deal of joy they usually got between him and his audience. An exception was the case where it was necessary to teach people how something worked and one had them gathered round the model—but that was hardly a lecture. One thing a model could provide was a three-dimensional illustration which none of the other visual aids could do.

As for projection he had a hatred of the episcope. People used it out of pure laziness. It magnified faults. Illustrations should be designed in the size in which they were to be seen. A lecturer should never use any form of projector if he had to operate it himself; he would lose his class if he did. It was vital to have a rehearsal. Everybody had had experience of slides put in upside down and shown in the wrong order. The film strip could not get in the wrong order or be shown upside down but it was more expensive.

If one went to a cinema one noticed how, before the film came on, the music played, then the lights dimmed, and then the light came on on the screen. There was no sudden break or flicking off of lights. If that effect could be achieved so much the better, but no preliminary headlines should be shown. The first frame should be ready as the lights went down. The best form of pointer in such circumstances was a powerful torch which could throw a spotlight on any part of the picture.

A film could do things no other aid could; it could focus the attention of the audience on a part of an experiment. It could enlarge or diminish enormously so that one could see one vista of a fly's eye or a whole landscape. It could speed up movement or slow it down so that you could follow the movement of a glacier or an insect's wing. No other medium could do that. But all films had a fixed tempo and one of the most important things to learn, as a lecturer, was to go at the right speed for yourself and the class. A film went grinding on and had no mercy on the audience.

The lecture should be the lecturer's and nobody else's. In essence the film was a substitute for a lecturer and not an assistance to him.

DISCUSSION

In the discussion which followed Mr. Scott asked if the lecturers knew a device called a drawing and writing projector? It projected writing and drawing over the head of the lecturer on to a screen behind him so that he could draw and write while still facing his audience. Both lecturers admitted that they knew the device but disliked it, though it might be useful in such circumstances as a highly technical engineering discussion.

In reply to a question from Mr. J. A. Aird (Commonwealth Scientific and Industrial Research Organization), Dr. Kitson Clark said that the speed of speaking should be controlled by the size of the room and the size of the class. Variation of speed was desirable but a large hall needed a rather slow tempo all the time. In reply to another question he said it was useful to find out how much one could manage, in a minute, of a page of typescript or of one's own writing.

Miss Margaret D. Gauntlett (Kodak Ltd.) asked the lecturers what they thought of lectures that were read throughout. They agreed that if a lecturer could avoid reading he could make his talk far more 'live'; if reading was necessary, then the lecturer should learn the right technique, in particular he should hold up the script so that he could read and also look at his audience.

Mr. A. E. Cornfield (B.P. Research Station) asked whether a lecturer should stop at intervals to ask whether he had been understood. If not, should questions be asked then or at the end of the lecture? Commander Bidder Clark said that stopping in the middle was bad practice as it broke the line of thought. Dr. Kitson Clark added that if a difficult technical question was asked it was important for the lecturer to repeat it clearly to ensure that the rest of the class knew what was being discussed.

Mr. Geoffrey Whatmore (British Institute of Management) asked how one could develop fluency and how to avoid the terror of 'drying up'? Commander Bidder Clark said that drying up was a question of sheer nervousness. The remedy was to take a deep breath, look round the class, and look at one's notes. Dr. Kitson Clark said that if the lecturer was afraid of not being able to complete his sentences he should use short, simple ones and always prepare very carefully beforehand. That was the real clue to the cure for nervousness.

PATENT CLASSIFICATION

BY M. R. GHEURY DE BRAY

Principal of Classification, The Patent Office

33rd Annual Conference, Nottingham, 7th September 1958

PATENT classification is a very big subject and to deal with it adequately I should need a whole course of lectures instead of only one. I shall, therefore, have to dismiss much of the subject very briefly.

Regarded merely as sources of information, patent specifications can be treated in the same way as any other documents. As the Chairman has said, it is the legal status of the specification which causes particular problems. The Patent Office is concerned with the claim, which states exactly what other people cannot do without the inventor's permission. We have to look for an 'anticipation'—some other specification which discloses something fitting all the terms of the claim in respect of which the search is being made. What we have to classify, on the other hand, is the description, because the claim adds nothing useful for our purpose.

Our problem, clearly, is to index the information we have and to arrange our classification and specifications so that we can search the sort of claims we receive as efficiently as possible. Reliability is, of course, the primary consideration, but we want to minimize the number of specifications we have to look at and avoid as far as possible the need to look twice at the same material.

Unfortunately we cannot foretell the sort of claims the inventors may put up; we can only go by experience and change our plans when we find that we have to do so—and it is usually necessary to change things sooner or later, because new techniques or discoveries start developments in new directions or the quantity of matter in a certain field becomes so large that it has to be subdivided in order to be readily handled.

In indexing we take account only of matter which is considered to be novel or of possible use as an anticipation of a claim which we may have to search in the future and of matter which, though not novel in itself, may be of value as an element of a combination of features or as qualifying other features.

A claim may require a search for features of various kinds and the classification scheme should cater for all those requirements. There must be some definite characteristics such as a particular kind of machine; but there may be alternative features, for example one or other of specified constituents of a substance. Very often a feature is indicated in less definite terms—for example, any means for performing a specified function or the presence of a detail of which only the general nature is indicated. In some cases there is the absence of a specified element. Specifications may include, in addition, features which are optional and almost certainly features that are implied but not specifically indicated. The existence of definite features can be provided for quite readily but it would be useful to indicate also the status of the various features—whether they are obligatory or alternative or optional—though as far as I know this has not been done anywhere.

A difficulty in providing for a feature which is defined by the function or result is that in many cases it is impossible in practice to foresee all the possible uses of a given piece of apparatus and all the forms of wording which may be used in the future in claims and which could refer to it. It is easier to imagine the kind of feature which will fulfil given terms but it is not uncommon in the course of a search to come across a specification which throws a new light on possible ways of interpreting a claim.

Inventions seem to fall naturally into a number of main subjects, which are more or less the same in the classification schemes of all the countries which make a search though they might differ very much in their scope, partly because of differences in patent law between different countries. In countries where the law empowers the patent office to require an inventor to limit his claims to the particular field for which his invention has been designed much more subject-matter is put in the classes relating to particular machines or processes than in the classes relating to devices applicable generally. In Britain there are no such powers and we are faced with claims not restricted to one field and it is not always clear whether an invention relates specially to a particular type of machine, so that it is more practicable to deal with them in a general class.

Our index entries are often not confined to inventions of the particular kind they indicate—for example, to processes or to apparatus—for a specification relating to an article may include a process for producing or treating the article and apparatus for carrying out the process. If there are sufficient specifications, separate entries for processes and apparatus are provided.

We approach the question purely in a practical manner and are continually having to strike a balance between opposing considerations. The classification is often not at all logical or ideal; patent classification is an art and certainly not a science. There are some rules of the game but they are more in the nature of guides than laws. The extent to which the subject-matter is broken down by classification depends mainly on the number of specifications in a particular field; if we only get a few inventions in a year it is easier to put all the specifications together and look at them all a few times than to spend more time on indexing each and then probably find that the inventions we get in future do not fit in with the way in which we have broken things down.

We try to collect our 'pieces of information' round focal points which are indicative of fields which can be well defined and distinguished, so that the majority of inventions can be put only into single fields thus defined. It is inevitable that those fields sometimes overlap; in that case we might index a specification in both the fields in question but more usually we artificially shape the fields so as to exclude the common matter from one of them, so that there is still only one place to look for a certain matter.

The smallest piece of information may unexpectedly be useful at some time but if we index a lot of material which is most unlikely to be useful, a good deal of time will be wasted looking at it every time we make a search, and the study of the useful material will be made more difficult. If we attempt to collect together all material having a common nature, for example, mechanisms of some kind, we often find that many of them have no real bearing on one another but are only of interest as parts of the particular machine for which they were designed.

If we try to reduce the time required for searching by amending our classification scheme we may find that the time required to reclassify all the specifications already indexed in a given field would take years to recoup by the consequent saving, even if the scheme did not lose its utility owing to subsequent changes in the nature of inventions. Another factor is that the reduction in search time may be partly or wholly offset by the time required to index each specification according to the more complex classification scheme. This has a bearing on the question of mechanization.

For the purpose of the search we have each specification, together with the drawings—if any—and the abridgement, pasted on a card, so that everything can be seen at the same time. The cards are sorted into groups, called files, which in the simplest arrangement, with a separate card for each index entry for a given specification, would comprise all the cards for one index entry. This would, however, be wasteful of space and time, and also disadvantageous in use, because if a claim has to be searched through more than one entry it involves looking twice at any specification that is indexed in two of the entries concerned and it is not possible to pick out readily specifications which are indexed in both of two given index entries where the features to which both entries relate are of importance.

For this reason, instead of having separate cards for all the different features, we simply use one card and put clips in the appropriate positions along the top edge to indicate different features. We have nine different colours of clips, and a card can accommodate twenty clips, so there is considerable scope for recording a number of entries on one card and it is easy to look through the file to see which cards have the particular feature required. This saves much time and is in effect a mechanized system. The use of these clips makes it easy to classify a subject or part of a subject according to different points of view—to divide it up twice or several times over using different characteristics to distinguish the divisions in each case.

I must now turn to the mechanization—a word that is in everybody's minds—of patent searching. The chief point about complete mechanization, such as the Americans are experimenting with, is that one can get out of a machine only what one has already put in. A machine cannot take account of the implications of a word or make a distinction between two meanings of the same word unless the full implications and full interpretations of words are completely worked out in the beginning, and I do not consider that this is possible.

Another point is that the claim to be searched for has to be carefully edited to correspond with the way in which information is stored in the machine. The Americans are trying to devise a standard language for describing machines and apparatus in terms suitable for mechanical searching, but this will involve a great deal of time on the coding of every specification which comes in, not to mention the thousands already in the files.

The coding that needs to be used for machine searching is much more detailed than an ordinary classification scheme, and constitutes rather a translation of a summary of a specification into symbols, because a machine has to select the dozen or less specifications which an examiner would pick out for himself for study; it is no good if the machine presents him with the fifty or a hundred which is a reasonable number to have under a given index entry in a classification scheme and of which the examiner doing a search could usually readily reject the majority to pick out a few for consideration.

Another disadvantage is that in machine searching the examiner only sees what the machine presents to him and knows nothing of what it rejects, so that the examiner loses that knowledge of the files which the Patent Office has found to be so valuable, and knowledge of the material closely related to what he is looking for, which may enable him to deal more efficiently with the claim he is investigating. A machine search covering such related matter would produce far too many specifications to be useful.

The Americans claim that machine searching is more thorough as well as time-saving. A machine has the advantage of infinite patience and diligence in carrying out certain operations, corresponding to searching for several clips in the Patent Office scheme, and should have greater capacity for handling and correlating index entries.

So far I have referred only to complete mechanization, of which the cost is forbidding, and of which the Patent Office considers the advantages to be dubious. But there is scope for the use of mechanical aids in the existing way of searching. It does not seem possible to dispense with our existing files of search material for several reasons; for one thing, a drawing would be very difficult to get into a machine but it gives an examiner all he wants to know at a glance. The Patent Office clipping arrangements provide for the recording on one card of combinations of features, and this is very useful. But if we have to search for more than two or three clips in different positions, or when we have alternatives to include, it becomes rather difficult.

For this sort of thing we have found the Batten or coincident-hole system of punched cards very useful in certain classes. Moreover, the examiner can be relieved of the mechanical part of the searching operation by a clerk picking out the cards for him to look at. In the case of luminescent materials, which were usually combinations of certain specified elements, we find that the system has cut down the search time by about two-thirds, but the search time is only a fraction of the time we spend on examination. There is no possibility of a tremendous saving of time in mechanizing our search arrangements.

Members of the audience have no doubt seen the code markings of the international classification scheme on Patent Office specifications. The basic scheme has been published in a White Paper and representatives of several countries in the Council of Europe are engaged in working out the details. It will take some years to complete. Its object is to assist in the unification of patent work among the various countries in Europe, but there are difficulties because of the differences in patent law in different countries resulting in different requirements and different ways of dealing with the same invention.

PATENT CLASSIFICATION FROM THE POINT OF VIEW OF THE PUBLIC

BY NICHOLAS J. FLOWER, F.C.I.P.A.

33rd Annual Conference, Nottingham, 7th September 1958

I HAVE the greatest admiration for those in the Patent Office and for those members of Aslib who have to concern themselves with problems of classification. The theory and practice of solving such problems, which no doubt occupy many members of Aslib, are of the greatest public importance. I have the greatest sympathy for the Patent Office in their efforts to overcome these problems, but members of the public who have to use the facilities of the Patent Office also deserve sympathy, for the system is as difficult to use as it was to devise. That remark is in no way meant to be disrespectful to Mr. de Bray and his colleagues. On the contrary, Patent Agents, members of the public and others who have to use the Patent Office Library find a system available to them which is based on something which has been devised for the purposes of the Patent Office only, namely, the checking to see whether inventions are really new ones.

The public has to take the system as it finds it and use it for a variety of different purposes. The first, and easier, part is the finding out if a patent application has been accepted in the name of a given applicant. There is no difficulty here; there are excellent indexes and, except for the odd card out of place during the war years, I have no criticism to make at all.

A slight complication arises if a person wants to find a patent granted in one name which now stands in another, for in that case he has to pay his 2*s*. and go into the recesses of the public search room in the Patent Office and search through assignee indexes which, when I last saw them, were unfortunately in manuscript. The entries had been made from day to day and were not strictly alphabetical.

Name searches can be set aside, since they raise no special problems of interest—perhaps the worst being the question whether 'Mac' should come before 'M' and, if so, whether 'Mc' should come before 'M' also instead of in its proper place after 'Mb'.

There are four purposes for which one normally uses the Patent Office Library facilities. First, there is the purpose for which the examiners also use it, namely, to check the novelty of an invention. But the mere acceptance of a patent application by the examiner in the Patent Office does not guarantee that it is a valid patent. As Mr. de Bray has pointed out, the searches made by the examiners are usually limited to British patent specifications, but any other publication, provided that it is earlier in date, can equally upset the validity of a patent.

The problem is even more serious. An invention, to be such as to give a valid patent, has not merely to be new; it has to be something better still—it has to constitute a real inventive step. It is no good saying, 'I want a patent for a small adaptation in a known sense in a known piece of apparatus'. Whilst the examiner must not say that this is obvious, a court of law can do so, and so can the Patent Office hearing officers in opposition and like proceedings. So the next sort of search that has to be made is a search to check whether an invention is obvious or is really meritorious. A third search arises from the fact that the mere possession of a patent in one's name does not give one the right to carry out the invention claimed in the patent. That monopoly does not exist. A patent is not a monopoly to do what is defined in the claims; it simply gives one the right to stop other people trespassing within those claims. The third type of search is therefore necessary to make sure that a given invention can be freely carried out without trespassing on somebody else's patent territory.

The fourth class of search is carried out simply to see what technical information is available and to purvey that information to those departments which thrive on it.

In making a novelty search members of the public do not have as full information as is available to the Patent Office examiners and it is time that ways were devised to make more of that material available to the public. In carrying out this type of search the first thing to do is to find the right heading in the classification—and that is an art just as much as devising the classification is an art. It is necessary to find the broad general heading and then the sub-headings, and the further sub-headings, until the searcher finds the heading which is closest to what he wants. In this process he prays that he will not end up with the heading 'Miscellaneous'.

While it is possible to get down to the precise press mark or code that applies to a certain heading, the public does not have a convenient tray of cards with clips which they can look through to find those which contain the right combinations of features. A member of the public, having obtained the press mark or code, pays his 10*s.* 6*d.* into the apparatus which then presents him with a so-called 'file list' of British patent specifications in the last fifty years falling under that heading. That is obtained in a matter of hours provided the mark falls within a class which has been subjected to the punching of cards. I prefer not to discuss what happens if the cards have not yet been punched; at any rate they have been punched for the more important classes. The alternative is a rather tiresome business of checking through manuscript lists, but it can be done.

If a member of the public is lucky and obtains a file list he will find that it is printed in four columns—each column with about fifty specifications listed in it—and the list may run to seven pages! That means a total of over 1,300 specifications under one heading. Continuing with the search, he will look at each one of these 1,300 specifications, or at abridgements of them, cutting out all those which are irrelevant and praying that he may find one on the subject in which he is interested. If he does not, he scratches his head and reckons that he has chosen the wrong heading and starts back at square 0.

This search will tell the searcher the novelty of the invention, for British purposes; it will tell him exactly what an efficient examiner would tell him. If he wants to check through all the literature to find the novelty of the invention, that would never be done; no doubt there are many patents which exist for their full lives in respect of inventions for which earlier publications exist in some obscure corner.

If the searcher wants to search through foreign as well as British patents he might use an organization called NIDER, at The Hague, which will search through the wider range of material made available by the Dutch Patent Office.

In carrying out an obviousness search the procedure is much the same but it may be necessary to cover a wider range of material, and the better course is usually to look through the ordinary technical literature rather than patent literature.

In an infringement search one can only hope that the specification will be in the correct heading. A difficulty may be—taking a chemical example—that the searcher may wish to react with B in a copper vessel or some special apparatus. He will search under the heading which covers the reaction of A with B and may get a green signal to go ahead—but there may be a specification elsewhere for using the special apparatus or reacting A with anything from B to Z, with no special reference to reacting A with B. Such an earlier patent would thereby be infringed.

In carrying out an information search the usual course is to work as for a novelty search, but one may watch all specifications that are issued each week in a given class or look through the abridgements of all specifications in a given class, or group volume. One of the significant things that Mr. de Bray has said is that a searcher unfortunately may not have the examiner's knowledge, and that leads to difficulty. May there not be some way in which a great degree of assistance could be obtained from an examiner handling a given class of subject matter? Perhaps an examiner could be available to help a member of the public to find the right classification in a difficult case. Possibly the Patent Office could carry out the searches themselves for a fee. If the Patent Office could make a search well within a year there would be time to determine the novelty of one's invention before spending great sums on trying to patent it in many different countries.

I intend no criticism of the considerable help which the public receives from the Patent Office, but so diverse are the purposes for which the public needs the classification information, as compared with the single purpose for which the examiner needs it, that I think that members of Aslib may be able to do a great deal, in collaboration with those interested in taking out patents and in searching in the library, possibly in discussions with the Patent Office, to trim and improve the system so as to provide the maximum information for the four different purposes required by the public as well as for the solitary Patent Office purpose.

DISCUSSION

MR. V. BISKE (Lobitos Oilfields Ltd.) said that the scheme used by the Patent Office was not one which could be taken in straight away, even with a preliminary idea of it, but as far as he knew no pamphlet had been issued by the Patent Office describing the scheme in detail. Should not this omission be rectified?

Mr. Flower had suggested that Patent Office clerks might carry out searches for members of the public. At present £5 had to be paid by way of an application fee; if that fee were raised to £35 for a complete official search within twelve months it would be worth while and in many cases the Patent Office would not have to do anything more.

At the moment there was a list of specifications corresponding to the various classifications. Would it not be a help—since the patents had to be carefully searched by the staff—to quote in addition to the patent number that part of it which was relevant?

MR. DE BRAY agreed that the Patent Office ought to produce a pamphlet of the sort suggested but it was rather difficult to know how much to put in it. Before the war they had published an explanatory note of three or four pages but that had not been good enough; many more details were required and that made it more expensive.

As for the Patent Office doing a search without a complete specification, he could not give any official encouragement to that although he thought that it had advantages. If a statement of claim could be put in without it having to be supported by description and checked up it might be valuable all round.

As for the file lists, it was sometimes difficult to say which part of a specification was relevant; it would be impossible to record it on punched cards and for the most part it would be adding to the examiner's work to try to indicate it. When he indexed and abridged the case he had read it all through and knew what was in it but he had not got the printed specification so he was not able to quote page numbers. That would have to be done after the publication of the specification, possibly two years after he had examined and classified it. It would be practically a new job.

MR. FLOWER said that he often thought it was cheaper in the long run to file one's patent application and let the Patent Office do the searching rather than pay a searcher. If a man had an important invention and wanted to file it in many countries it was extremely expensive and, since it was advantageous for him to file his patent application in respect of foreign countries within a year of the British application, Mr. Flower would like to see the Patent Office do the search a long time within that year so that, if they found a complete knockout, that was the end of the matter, whereas if they did not find anything relevant the inventor would be encouraged and still had time to file abroad.

MR. F. NEWBY (Hardman & Holden Ltd.) asked if it would be true to say that, having made a search and found one specification which seemed to be a fairly close anticipation of something one had in mind, a request for a list of citations on the basis of that particular specification would be equivalent to having made a patent search.

MR. FLOWER said that, with reservations, it would. If a person were carrying out a search and were starting in most recent times and working backwards—as was usually wise—and found at an early stage something which was quite similar but not exactly identical with the invention he was checking on, a very good plan, which only cost 1*s*., was to find out what the examiner had cited.

MR. DE BRAY said that it was important not to be misled, because the list of citations supplied would be that applying to the claim of the specification in question in its original form. It might be quite different from the claim in the final specification and might not be anything like a complete list of the specifications relating to the original claim.

MR. FELIX LIEBESNY (The British Aluminium Co. Ltd.) said that the Patent Office had the practice of revising its classification at the end of a group of over 20,000 specifications, which corresponded roughly to a period of one year. Mr. Flower had said that it was quite easy to search when the searcher was in possession of a file list but he had skimmed over the problem facing him when he could not get a list. He then got the current press mark but it was always difficult to correlate it with previous ones when they were altered at the end of every 20,000 specifications. Was there any concordance with old and new press marks and, if so, was it published?

MR. DE BRAY said that it was often clear what had happened. If the wording had been slightly altered the mark would not have been altered. If an old mark had been subdivided it was pretty clear to follow up. It might be that a searcher was searching for B2A3 and had gone back a few years and found nothing more subdivided than B2A, with similar wording in the key—but he would still be on the right track. A note of the most important changes was published each year in the *Journal* but it was next to impossible to go further.

MR. NEWBY asked whether there was any reason why the titles of patent specifications should continue to be such things as 'Improvements in and relating to textile auxiliaries'—titles so broad that they indicated nothing whatsoever.

MR. FLOWER said that in filing a patent application it was often convenient to put on a very vague title so that the published information in the weekly patent journal would be only an abbreviated version of the vague title and one's competitors would not learn what one was up to at the moment.

MR. DE BRAY said that if Mr. Newby was referring to the titles of the applications filed there had never been time to amend them. They were published the week after the applications had been filed and were taken from the documents filed in whatever form they might be. The titles of the complete specifications accepted were a little more satisfactory.

MR. W. E. CLASON (N.V. Philips' and NIDER) said that he had been a constant user of the Patent Office Library and thought it was one of the most accessible libraries in the world, but he missed the collection of British patents grouped according to the official classification, which would be found in every patent office library in Europe and in the United States.

MR. DE BRAY said that Mr. Clason would now find specifications published during the last year or so put in boxes according to classes but not according to the index marks. It was a matter of expense. It involved duplicating the organization for providing the examiners with their search material and seeing that corresponding alterations were made in the library every time the examiners' files were amended.

MR. J. L. IRELAND (Peter Spence & Sons Ltd.) asked whether there was any way of finding equivalents of patents. He was often quoted British patent numbers and asked to see if an equivalent patent existed in America or Germany.

MR. FLOWER said that there was no short cut to making a proper search of this type but it was best to try to make a name search first. If a searcher found two things with the same name and compared them that was all right, but if the answer was in the negative it would probably be necessary to make a subject-matter search. If effect were ever given to plans being talked about, a central bureau for keeping records of convention priority dates claimed for patents would be set up in Switzerland and that would be of assistance.

MR. IRELAND asked whether it was possible to apply to Washington for a list of American classifications. Did Washington maintain a file list?

MR. D. BALL (Albert E. Reed & Co. Ltd.) said that it was possible to obtain a class list from the United States Patent Office. It was a list of the specifications whose main class number was the one required and a list of cross-references was also supplied.

MR. CLEVERDON (College of Aeronautics) said that it had been claimed that the American system of mechanization was more efficient in certain circumstances. Had Mr. de Bray any information as to what the Americans were using mechanization for?

MR. DE BRAY said that the Americans were using a computer of some sort for searching steroids. The Americans claimed to have achieved tremendous improvements in the rate of searching and they had said there was a gain in thoroughness of search but he did not really understand what they had achieved. They talked about dealing with twenty-five cases a week on this class of steroids instead of three or four. The British Patent Office could probably do a search in not very much longer than the Americans would take with the machine—but the search time was only a small fraction of the British examination time. Nobody could examine twenty-five cases a week using the word 'examine' in the sense in which the British office does.

MR. H. FREYTAG (Shoe Research Association) asked whether it was possible, when the subject being searched for was covered by two press marks, to get the two file lists and see which patents appeared in both, in a similar way to the examiner's use of two clips.

MR. FLOWER said that he had never done it but had given the matter some thought. It seemed to him that there was a considerable element of (*a*) human error and (*b*) discretion in indexing patents, and if the searcher was going to rely on the patent he was searching for being in both of two lists he would think the risk rather high; it might be in one only and therefore be missed. That was the sort of thing he wished could be done by machine at the Patent Office but it was not available except in a corner of the chemical field.

NATIONAL CENTRAL LIBRARY

THE 42nd Annual Report of the National Central Library, for the year ending 28th February 1958, records the decision to postpone from 1st January 1958 to 1st January 1959 operation of the arrangement under which the Library should cease to handle requests from the regional systems for British books listed in the British National Bibliography and published on, or after, what is now the latter date. It is understood that special and university libraries may continue to request the loan of current British books after 1st January 1959 through the National Central Library but, in such cases, the books would have to be borrowed from sources other than through the regional systems. Negotiations are in progress with a view to allowing requests for current British books from special and university libraries in the London and south-eastern areas, not available elsewhere, to be forwarded by the National Central Library to the London and south-eastern regional systems, membership of which is confined to libraries of local authorities. Special libraries outside the London and south-eastern areas are eligible for membership of the appropriate regional system.

The Implementation Committee has devoted much time to devising an inter-regional scheme to supplement the coverage of current British books by the regions.

Approval has been given by the Trustees to the suggestion made on behalf of the *British union-catalogue of periodicals* that the work of maintaining the catalogue, after the completion of the supplement, should be taken over on a continuing basis as part of the library's normal activities.

Total applications received (excluding adult classes) were 79,971 as compared with 86,785 for the previous year. The percentage of applications successfully dealt with rose to 73.66 as compared with 69.01 in the preceding year.

Outlier libraries, comprising now 244 special libraries and 29 London borough libraries, lent 14,378 volumes. Other special libraries provided 2,728 additional loans.

Figures for international loans are 2,663 lent overseas by British libraries and 1,642 borrowed from overseas; loans were made to forty-eight countries and obtained from twenty-three countries.

An improved staff situation has permitted a satisfactory year's work on the Union Catalogues. It is reported that the *Russian Union Catalogue* contained at the end of February 1958 entries for 76,594 volumes of books and pamphlets, 3,885 periodicals (titles), 111,622 periodicals (issues) and 101 newspapers (titles); of the 1,557 applications received it was possible to satisfy 63.9 per cent.

The report pays tribute to the work of Mr. R. H. Hill as librarian and secretary to the Trustees for a period of over thirteen years.

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All the above items may be borrowed from Aslib Library, except those marked with an asterisk. Most of these are available for consultation in the Library, apart from a few for which locations in other libraries can be given.

ASLIB CALENDAR

1959

JANUARY

FRIDAY 16th. Fuel and Power Group visit.

WEDNESDAY 21st. Midlands Branch meeting.

FEBRUARY

FRIDAY 6th. Scottish Branch Annual General Meeting.

FRIDAY 13th. Fuel and Power Group visit.

MARCH

WEDNESDAY 25th. Midlands Branch Annual General Meeting.

APRIL

FRIDAY 10th. Fuel and Power Group visit.

Christmas 1958

Aslib wishes all its members a very happy Christmas and a prosperous New Year.

Head of Research

Mr. C. W. Hanson, B.SC., F.I.INF.SC., Head of the Information Department, British Scientific Instrument Research Association, has been appointed by Aslib as its first Head of Research. Mr. Hanson has for many years taken an active interest in the work of the Association and will be known to many members for the part he has taken in the various Aslib training courses. He was a member of Council from 1951–54 and was re-elected in 1956. He has also served on the Executive and Finance, Information and Library, Education, and Research committees.

New Librarian

Members will be interested to hear that Mr. G. M. Paterson, B.A., A.L.A., Librarian of Ealing Technical College and School of Art, has been appointed Librarian of Aslib in succession to Mr. J. Bird. Mr. Paterson will take up his appointment on 1st January 1959.

Annual Conference papers

This year, as an experiment, members are invited to submit papers on any subject related to information work, to be considered for inclusion in the 1959 Annual Conference programme. The Conference and Meetings Committee will be responsible for making a selection of two or three papers from those submitted and the authors will be asked to present the papers at the conference. Entries must reach Aslib (Conferences and Courses Department) not later than 1st March 1959, and should be typed in duplicate.

Midlands Branch

Twenty-six members attended a meeting on 16th October to hear a very lively and informative paper by Mr. R. Sewell, Information Officer, United Steel Companies, describing 'Some impressions of continental attitudes to information services'. The talk was concerned with principles and personalities, as the purpose of Mr. Sewell's recent tour, on which his talk was based, was to examine methods of operating information services, to study the attitudes of industrial management and research staffs toward technical information, and to contact some of the leading people in the technical information field in Western Europe. Technical information services visited ranged from that of Royal Dutch Shell in The Hague to the small technical libraries of certain research organizations. Afterwards members saw a film and slides illustrating a visit to the Soviet Union.

Electronics Group

The Group has decided to set up a working party 'to survey the extent and adequacy of published abstracts relating to the file of electronics', and 'to investigate the extent to which abstract bulletins are prepared for internal use, with a view to assessing the amount of time and labour involved and whether these bulletins could more satisfactorily be prepared by a co-ordinated effort. Alternatively this investigation might form a basis for estimating the extent to which organizations would contribute towards a system of published abstracts which would provide a more comprehensive coverage of the field.' The working party is to consist of Mr. S. T. Cope, Chairman; Miss R. England, Plessey Company Ltd.; and Mr. N. E. C. Isotta, Ministry of Supply, TIL. Those specially interested in the subjects are asked to write to Mr. Cope, Baddow Research Laboratories, West Hanningfield Road, Great Baddow, Chelmsford, Essex.

National Central Library

Special and university librarians who may have been somewhat startled by the announcement that, after 1st January 1959, the National Central Library would cease to handle requests for British books listed in the British National Bibliography and published on or after that date, should read the note on the Forty-second Annual Report of the National Central Library on page 325 of this issue. This note explains how such libraries may avail themselves of the National Central Library's services for borrowing books published after the date stated. It is understood that a circular letter explaining the position is being sent by the National Central Library to those special and university libraries which co-operate with it.

International Conference on Information Processing

An international conference on information processing will be held in Paris from 15th to 20th June 1959. It is being organized by Unesco with the help of a group of consultants from various countries. The British consultant is Dr. M. V. Wilkes, M.A., PH.D., A.M.I.E.E., F.R.S., Director of the University Mathematical Laboratory, Cambridge. The conference will cover six main headings: methods of digital computing and numerical analysis; logical design of digital computers; common symbolic language for digital computers; automatic translation of languages; collection, storage, and retrieval of information; pattern recognition and machine learning. Symposia on a few special subjects will also be held and an exhibition of data processing equipment will be shown in Paris during the conference.

In the United Kingdom, inquiries, offers of papers (accompanied by abstracts), and applications for attendance at the conference should be addressed to the Honorary Secretary, Group B—British Conference on Automation and Computation, Institution of Electrical Engineers, Savoy Place, London, W.C.2. Overseas inquiries should be made through national computer societies or directly to the Department of Natural Sciences, Unesco, Paris.

William Turner Berry

Mr. Turner Berry has retired from the post of Librarian to the St. Bride Printing Library, after a total service to the St. Bride Institute of forty-five years. During this time he has become internationally known for his contributions to the studies of typography and printing. Mr. Berry is succeeded as Librarian by Mr. James Moseley who has been Assistant Librarian for the past two years.

Journal of Documentation

Aslib has received many requests for *The Journal of Documentation*, vol. 14, no. 1, March 1958, which is already out of print. Any members who hold copies of this issue which they do not wish to keep are asked to return the journals to Aslib.

MEMBERS' ADVERTISEMENTS

FRENCH translations—technical, scientific, legal, by specialist. Roland Turkel, Licencié ès Lettres (Lille), F.I.L., 207 Ruskin Park House, Champion Hill, London, S.E.5. Tel. BRI 2499.

TRANSLATIONS, TECHNICAL, SCIENTIFIC, all languages, by specialists with sound technical and scientific qualifications. J. Smuts, B.SC.(ENGIN.), 140 Wightman Road, London, N.8. Tel. FIT 0835.

Situations vacant

BRITISH TELECOMMUNICATIONS RESEARCH LTD., Taplow Court, Taplow, nr. Maidenhead, Berks, have a vacancy in their technical library for a male or female Assistant Librarian. In general the person appointed will assist in the day-to-day running of the library and in particular will be required to assist in the indexing of technical literature. Applicants should have had some previous experience in this work, preferably in the fields of telecommunications and electronics. Consideration will also be given to applicants without previous experience but who have passed the Library Association Registration Examination Group A (Classification and Cataloguing) and have the necessary technical background to embrace documentation as a career. The successful applicant will be assisted in the completion of professional studies. The post is permanent and superannuated after the usual probationary period and the salary will be commensurate with age, qualifications and experience. Working conditions are excellent in attractive surroundings. Five-day week; canteen and excellent social amenities. Applications should be addressed to the General Manager.

BRITISH TITAN PRODUCTS COMPANY LIMITED has a vacancy for a female reader and abstractor at its Billingham, Co. Durham, Laboratories. The duties will be to read a wide range of current scientific literature (pure and

applied), to extract information of use both to the manufacturing and research programme of the company and to assist in the collation and dissemination of the information so gained. Candidates should possess a science degree or equivalent and previous experience in this field and a knowledge of German and French is desirable. Salary and prospects are very attractive for a candidate with the right qualities. Conditions of work are good; a staff bonus, superannuation scheme and non-contributory life assurance are in operation. Applications will be treated in the strictest confidence and should be addressed to the Personnel Manager, British Titan Products Company Limited, Billingham, Co. Durham, quoting S.3.

THE IRON AND STEEL INSTITUTE requires a young man or woman with scientific or technical qualifications, preferably to degree level. He or she will work as an assistant to the Information Officer and will have an opportunity to train in an important and expanding field which combines science and an information service. An interest in metallurgy and in the collection and provision of scientific and technical information is essential. A knowledge of one foreign language, and practical experience in metallurgical industry or research would be useful. A five-day week is customary, a pensions scheme is in operation and luncheon vouchers are supplied. Salary will be according to qualifications and experience. Apply in writing to The Secretary, The Iron and Steel Institute, 4 Grosvenor Gardens, London, S.W.1.

LIBRARY ASSISTANT required in laboratory dealing with building and civil engineering investigations. Some experience in a technical library desirable but not essential. Work includes classification (U.D.C.), cataloguing and assistance with information work. Typing ability an advantage. Apply in writing to GEORGE WIMPEY & CO. LIMITED, Central Laboratory, Springfield Road, Hayes, Middlesex.

TECHNICAL EDITOR/LIBRARIAN required for small library in new research laboratories ten miles from Cambridge. Candidates should possess a science degree and some knowledge of modern languages. Conditions of service include pension scheme, canteen, and five-day week. For application form write to the Secretary, Tube Investments Research Laboratories, Hinxton Hall, Cambridge, quoting reference AP.146.

TRANSLATOR required for translation of Russian technical periodicals, books, etc. Sound knowledge of mechanical or production engineering. This is a key position in a rapidly expanding organization in the East Midlands. Excellent prospects of advancement, working conditions and superannuation scheme. Send full details to the Secretary, Production Engineering Research Association, Melton Mowbray, Leics.

Wanted

D.S.I.R. Lending Library Unit is anxious to obtain, at reasonable prices, the following periodicals. Offers should be sent to D.S.I.R. Lending Library Unit, 20 Chester Terrace, Regent's Park, London, N.W.1.

Biological abstracts, v. 1, 1926 to 1955.
Concrete and constructional engineering, v. 1, 1906–1920 to 1955.
Journal of pharmacology and experimental therapeutics, 1930 to 1955 (including Part 2. Pharmacological review, 1949 to 1955).
Mathematical reviews, v. 1, 1940 to 1955.
Metall. Wirtschaft, Wissenschaft, Technik, 1922 to 1944, 1947 to 1955. (Title varies: 1922–1944, v. 1–23, Metallwirtschaft, Metallwissenschaft, Metalltechnik).
Physica, v. 1, 1933 to 1955.
Planta, v. 1, 1925 to 1955.
Protoplasma, v. 1, 1926 to 1955.
Soil science, v. 1, 1916 to 1955.
Transactions of the American Institute of Mining Engineers, 1910 to 1957.
Transactions of the Canadian Institute of Mining and Metallurgy and Mining Society of Nova Scotia, 1940 to 1957.

For teaching bibliographical research methods to engineering degree students:
B.N.B. volumes for 1950, 1951, 1952, 1953, 1954.
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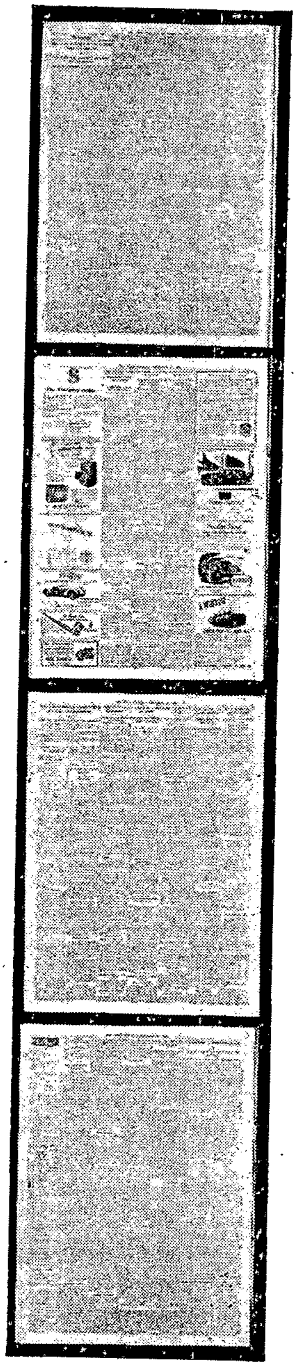
C.B.I. volumes for 1928–32, 1933–37, 1938–42.
Any volumes or parts of *Science Abstracts* A or B 1930 onwards.
Any volumes of *Engineering Index*.
Any volumes or parts of *Applied Mechanics Reviews*.

Replies to Librarian, College of Engineering Technology, Eastlands, Rugby.



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